A-1 URBAN WATER CONSERVATION GRANT APPLICATION
COVER SHEET

1. Applicant (Organization or affiliation): Placer County Water Agency
2. Project Title: Canal Lining
3. Person authorized to sign and submit proposal:
   - **Name, Title**: David Breninger
   - **Mailing address**: P.O. Box 6570, Auburn, CA 95604
   - **Telephone**: (530) 823-4864
   - **Fax**: (530) 8234884
   - **E-mail**: DBreninger@pcwa.net
4. Contact person (if different):
   - **Name, Title**: Mike Nichol
   - **Mailing address**: P.O. Box 6570, Auburn, CA 95604
   - **Telephone**: (530) 823-4864
   - **Fax**: (530) 8234884
   - **E-mail**: MNickol@pcwa.net
5. Funds requested (dollar amount): $528,008
6. Applicant funds pledged (local cost share) (dollar amount): $528,008
7. Total project costs (dollar amount): $1,056,016
8. Estimated net water savings (acre-feet/year):
   - Estimated total amount of water to be saved (acre-feet): 900
   - over 25 years (project life): 22,500
   - Benefit/cost ratio of project for applicant: 1.6
   - Estimated average $/acre-feet of water to be saved: $47
9. Project life (month/year to month/year): 10/2003-9/2006
10. State Assembly District where the project is to be conducted: 4
11. State Senate District where the project is to be conducted: 1
12. Congressional District(s) where the project is to be conducted: 4
13. County where the project is to be conducted: Placer County
14. Do the actions in this application involve physical changes in land use, or potential future changes in land use?
    - (a) Yes (if yes, complete the land use check list at http://www.calfed.water.ca.gov/adobe_pdf/Questionnaires_EC_Permits_LandUse.pdf and submit it with the proposal) --
    - (b) No No

A-2 APPLICATION SIGNATURE PAGE

By signing below, the official declares the following:

The truthfulness of all representations in the application;

The individual signing the form is authorized to submit the application on behalf of the applicant;

The individual signing the form read and understood the conflict of interest and confidentiality section and waives any and all rights to privacy and confidentiality of the application on behalf of the applicant; and

The applicant will comply with all terms and conditions identified in this Application Package if selected for funding.

Signature	David Breninger, General Manager Name and title	November 27, 2002 Date

A-3 APPLICATION CHECKLIST

Complete this checklist to confirm all sections of this application package have been completed.

Part A: Project Description, Organizational, Financial and Legal Information
__X__A-1 Urban Water Conservation Grant Application Cover Sheet
__X__A-2 Application Signature Page
__X__A-3 Application Checklist
__X__A-4 Description of Project
__X__A-5 Maps
__X__A-6 Statement of work, schedule
__X__A-7 Monitoring and evaluation
__X__A-8 Qualification of applicant and cooperators
__X__A-9 Innovation
__X__A-10 Agency authority
__X__A-11 Operation and maintenance (O&M)

Part B: Engineering and Hydrologic Feasibility (construction projects only)
__X__B-1 Certification statement
__X__B-2 Project reports and previous studies
__X__B-3 Preliminary project plans and specifications
__X__B-4 Construction inspection plan

Part C: Plan for Environmental Documentation and Permitting
__X__C-1 CEQA/NEPA
__X__C-2 Permits, easements, licenses, acquisitions, and certifications
__X__C-3 Local land use plans
__X__C-4 Applicable legal requirements

Part D: Need for Project and Community Involvement
__X__D-1 Need for project
__X__D-2 Outreach, community involvement, support, opposition

Part E: Water Use Efficiency Improvements and Other Benefits
__X__E-1 Water use efficiency improvements
__X__E-2 Other project benefits

Part F: Economic Justification, Benefits to Costs Analysis
__X__F-1 Net water savings
__X__F-2 Project budget and budget justification
__X__F-3 Economic efficiency

Appendix A: Benefit/Cost Analysis Tables
__X__Tables 1; 2; 3; 4a, 4b, 4c, 4d; and 5
Appendix B: Gunite History
Appendix C: Project Manager Resume
Appendix D: Placer County Water Agency Act
Appendix E: Preliminary Project Plans and Specifications
Appendix F: Customer Water Use Study prepared by MBK Engineers, November 2000
Appendix G: Department of Water Resources Water Conservation Study, 2000
Appendix H: American River Pump Station Project – Record of Decision, September 2002 and Board of Director's Minutes, July 11, 2002
Appendix I: Letter of Support

A-4 DESCRIPTION OF PROJECT

This project consists of lining a total of 4 miles of selected segments of existing unlined canals over a three-year time period. PCWA has identified selected segments of the Boardman Canal, Sherland Canal, Antelope Canal, and Red Ravine Canal to be lined. The objective of this project is to reduce leakage of water to unusable sources from the raw water canal system. This project partially meets the definition of BMP 3, which is called system water audits, and leak detection and repair.

This project consists of continuing PCWA's canal lining project to line canals to reduce the unaccounted-for water occurring due to canal infiltration. In order to convey surface water to mining operations during the late 1800's, miners built an extensive water conveyance system, much of which is still in use today throughout Placer County. Canals, pipelines, and flumes are now used to convey raw water to municipal water treatment plants and some agricultural customers. The majority of the canals are unlined.

PCWA has an ongoing canal lining project that began in 1992 and resumed in 1996 through the present. During the program years, PCWA has averaged approximately 1.5 miles of canal lining per year. By the end of 2002, PCWA will have lined 13 miles of their 165 mile canal system. Appendix B presents a history of the canal lining work done from the years 2000 to 2002.

It is expected that this canal lining project will result in savings of **900 ac-ft per year** or **22,500 ac-ft** of water over 25 years. The project cost is **$1,056,016**, with a project benefit to cost ratio of **1.6**. The grant application is requesting **$528,008**.

A-5 MAPS

A map of the location of the general project area is provided in Figure 1. Figure 2 presents a detailed map depicting the PCWA canals. The specific locations of the sections of canal to be lined for this project are selected by PCWA to target the canal segments with higher than average water loss. These canal segments are scattered throughout the canal system

A-6 STATEMENT OF WORK, SCHEDULE

This project consists of lining selected locations of the canal and then preparing the monitoring and evaluation report. PCWA will use their canal lining engineering plans and details and construction methods to implement this project. Standard purchasing and contracting procedures will be used to purchase project materials and contract with a general contractor for conducting the canal lining work. Appendix E presents the preliminary plans and specifications for this project.

The procedure of canal lining for this project is by the gunite method. Gunite is the application of a dry sand/cement mixture by spray onto a surface. The gunite equipment is a machine operated by compressed air with cement material delivered through a rubber hose that is combined with water at a nozzle tip. This process allows the material to be placed at high velocity with minimum hydration. The benefit of gunite is the longer distance the material can be conveyed by the delivery hose compared to other methods.

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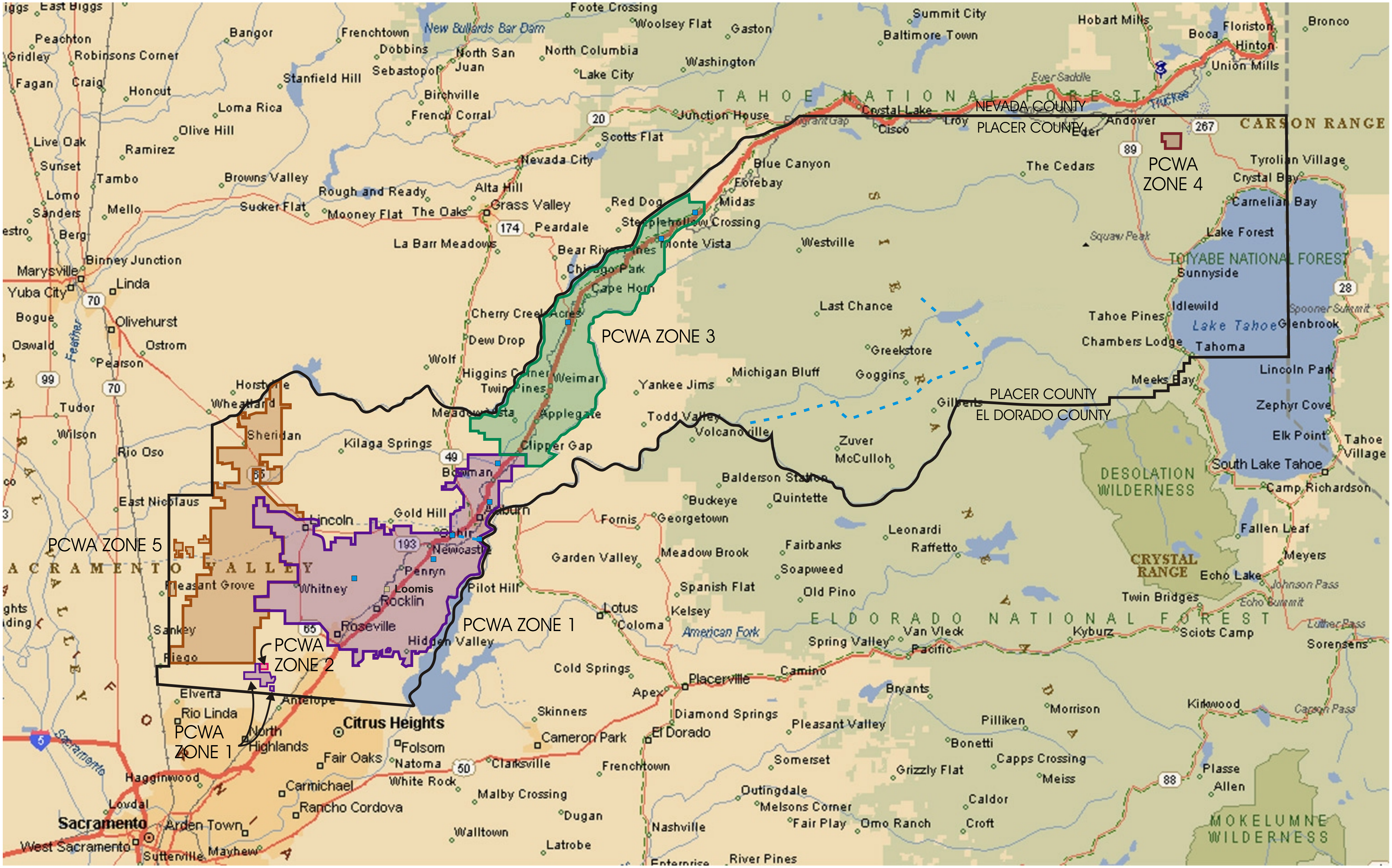
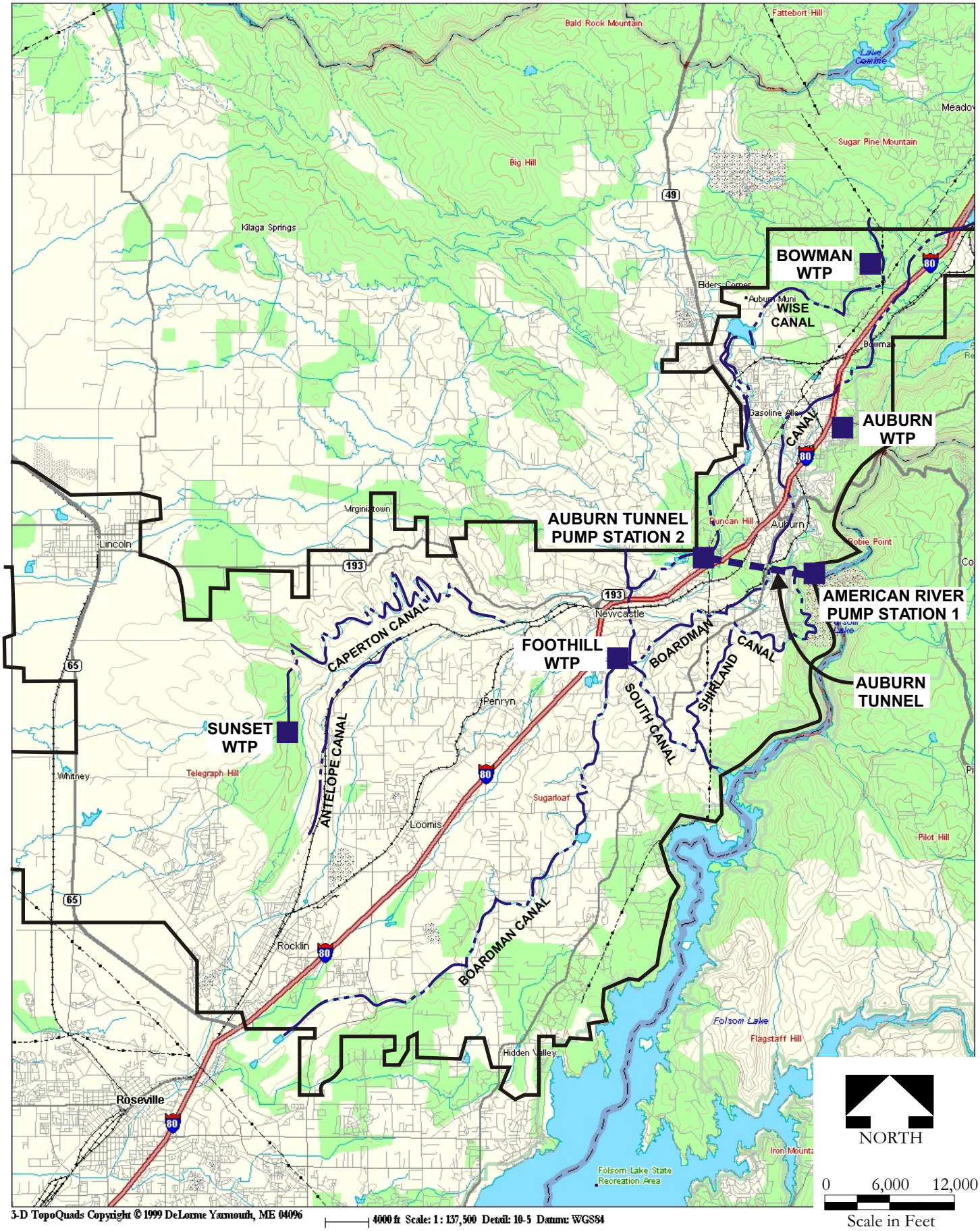


Source: Microsoft Trip Planner 98

BROWN AND CALDWELL	DATE 12-3-02	Placer County Water Agency, Auburn, California	FIGURE
	PROJECT 20649	TITLE Location Map	1



P:\20000\20649-PCWA\2003 Urban Water Conservation Grant Application - due Dec 3, 2002\Canal Lining

DATE 12-2-02	PROJECT 20649-005	SITE Placer County Water Agency, Auburn, California	FIGURE 2
BROWN AND CALDWELL		TITLE Canal Improvement Locations	

A project work schedule is provided in Figure 3 and quarterly expenditures are projected in Table 1.

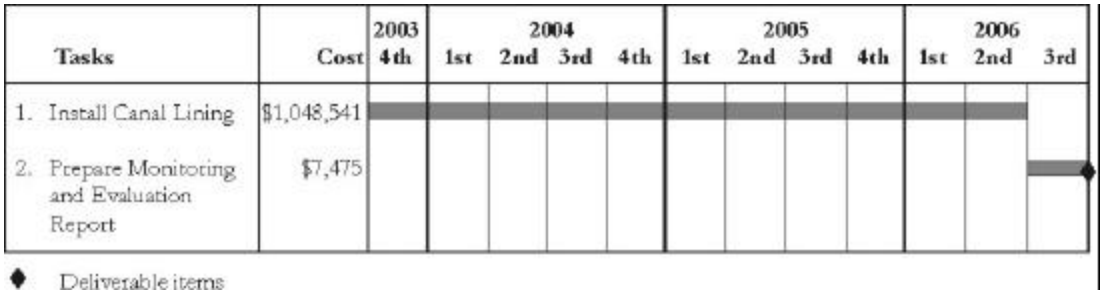


Figure 3. Project Timeline

Table 1. Quarterly Expenditure Projection

Quarter	Months	Expenditure
2003		
4	October-December	95,332
2004		
1	January-March	95,322
2	April-June	95,322
3	July-September	95,322
4	October-December	95,322
2005		
1	January-March	95,322
2	April-June	95,322
3	July-September	95,322
4	October-December	95,322
2006		
1	January-March	95,322
2	April-June	95,322
3	July-September	7,475
Total		1,056,016

A-7 MONITORING AND EVALUATION

The monitoring and assessment measures used for this project will consist of quantifying actual water savings. PCWA will monitor and assess the before and after water use following the canal lining. The project performance will be measured by the amount of water saved as a result of lining the 4 miles of canals in this project. Water saved will be estimated by comparing pre-project and post-project flows from raw water diversion locations to treatment plant locations.

A Monitoring and Evaluation Report will be prepared following completion of the canal lining. This report will document the results of monitoring before and after water use in the segments of the canals lined for this project. The results of these measurements will be documented in the Monitoring and Evaluation Report. The Monitoring and Evaluation Report will be made available to the public at the PCWA office and through various outreach methods.

As a separate project, PCWA is conducting a Canal and Reservoir Efficiency Feasibility Study, which is scheduled for completion in mid-2004. The study will quantify more

accurately the amount of water losses occurring from the canal system. The results of that study will be available to assist in preparing the monitoring and evaluation report for this project.

A-8 QUALIFICATIONS OF THE APPLICANT AND COOPERATORS

The project manager responsible for the canal lining program will be Mike Nichol, the Senior Utility Resource Specialist for PCWA. Mr. Nichol's resume is included in Appendix C. Mr. Nichol has 11 years of experience with the PCWA raw water distribution system. No external cooperators will be utilized for this project.

A-9 INNOVATION

This project consists of lining canals to reduce water losses due to leakage. There are a significant number of water agencies in California that utilize unlined canals and ditches to transport water. This is particularly true of foothill water agencies, where unlined canals are very common. PCWA intends to improve the material and installation requirements for canal lining construction based on its experiences conducting this project. This information will be useful to the other water agencies with unlined canals in California. PCWA will be presenting the results of its canal lining experiences and construction plans and specifications to other water agencies through presentations at water conferences and similar forums.

A-10 AGENCY AUTHORITY

1. Does the applicant have the legal authority to submit an application and to enter into a funding contract with the State? Provide documentation such as an agency board resolution or other evidence of authority.

   During their meeting on November 7, 2002, the PCWA Board of Directors authorized David Breninger, the general manager, to submit this funding application and enter into a funding contract with the State. Documentation of this authority will be provided if requested.

2. What is the legal authority under which the applicant was formed and is authorized to operate?

   PCWA is a county water agency. Appendix D presents the "Placer County Water Agency Act."

3. Is the applicant required to hold an election before entering into a funding contract with the State?

   No.

4. Will the funding agreement between the applicant and the State of California be subject to review and/or approval by other government agencies? If yes, identify all such agencies (e.g. Local Area Formation Commission, local governments, U.S. Forest Service, California Coastal Commission, California Department of Health Services, etc.).

   No.

5. Is there any pending litigation that may impact the financial condition of the applicant, the operation of the water facilities, or its ability to complete the proposed project. If none is pending, so state.

There is no pending litigation impacting the Agency's ability to enter into the proposed grant.

A-11 OPERATIONS AND MAINTENANCE

This section does not apply to this project since there are no operations and maintenance costs with this project. The canal lining to be accomplished by the project will result in reducing the operation and maintenance costs for unlined canals.

PART B—ENGINEERING AND HYDROLOGIC FEASIBILITY

B-1 CERTIFICATION STATEMENT

Sample engineering feasibility certification statement

I, Paul Selsky, a California registered civil engineer, have reviewed the information presented in support of this application. Based on this information, and any other knowledge I have regarding the proposed project, I find that it can be designed, constructed, and operated to accomplish the purpose for which it is planned. There is a sufficient water supply for the project. The information I have reviewed to document this statement includes the *Customer Water Use Study, MBK Engineers, November 2000(Appendix F); Urban Water Management Plan, December 2000; and DWR Water Conservation Study, February 2000 (Appendix G).*

(Original signature and stamp with expiration date)

B-2 PROJECT REPORTS AND PREVIOUS STUDIES

Several past reports have noted the need to target water loss occurring from PCWA's raw water canal system. In August 1999, PCWA requested assistance from DWR's Water Use Efficiency Office to assess water efficiency opportunities. The February 2000 study (Appendix G) recommended that PCWA give attention to the 16 percent unaccounted-for water in Zone 1. A study was prepared by MBK Engineers in November 2000, quantified water losses from the canal system (Appendix F). The PCWA year 2000 Urban Water Management Plan (Brown and Caldwell, December 2000) indicated the need to reduce unaccounted-for water and identified future multiple dry year water supply deficits.

As a separate project, PCWA has recently started a Canal and Reservoir Efficiency Feasibility Study, which is scheduled for completion in mid-2004. The study may provide some useful information to help focus the canal lining efforts under this project.

B-3 PRELIMINARY PROJECT PLANS AND SPECIFICATIONS

Preliminary project plans and specifications are included in Appendix E

B-4 CONSTRUCTION INSPECTION PLAN

For this project, PCWA will assign an engineer to serve as a Project Engineer/Manager. The project manager will be responsible for the overall conduct of the project. The project manager will also be responsible for the design and preparation of plans and specifications, bidding, construction management, and assuring construction inspection and testing are performed. PCWA staff will inspect the canal lining construction.

PART C—PLAN FOR COMPLETION OF ENVIRONMENTAL DOCUMENTATION AND PERMITTING REQUIREMENTS

C-1 CALIFORNIA ENVIRONMENTAL QUALITY ACT AND NATIONAL ENVIRONMENTAL POLICY ACT

This project meets the definition of a project that consists of the replacement or reconstruction of a portion of the existing utility system and/or facilities involving negligible or no expansion of system capacity. This type of project meets the requirements of a Class 2 Categorical Exemption under Article 19, Section 15302 of Guidelines for Implementation of the California Environmental Quality Act. This project also qualifies as a categorical exclusion under the National Environmental Policy Act.

C-2 PERMITS, EASEMENTS, LICENSES, ACQUISITIONS, AND CERTIFICATIONS

No permits, easements, licenses, acquisitions, and certifications are required for this project. Land easements are required for this project. The cost of the easements is included in the budget.

C-3 LOCAL LAND USE PLANS

There are no relevant local land use plans.

C-4 APPLICABLE LEGAL REQUIREMENTS

There are no applicable legal requirements.

PART D- NEED FOR PROJECT AND COMMUNITY INVOLVEMENT

D-1 NEED FOR THE PROJECT

Need for this Project. This project is needed to reduce water losses due to leakage from PCWA's raw water canal system. The canals are used to deliver water to PCWA's several municipal water treatment plants. The majority of the canals are unlined. A significant amount of water loss occurs from these unlined canals. By the end of 2002 (Appendix B), the Agency will have lined 13 miles of their 165 mile canal system (8 percent of the canal system). This project will result in the lining of four additional miles of canal.

Water System Condition. Placer County Water Agency is a public agency established in 1957 by a special Act of the California Legislature (Placer County Water Agency Act, Statutes of 1957, Chapter 1234). Its boundaries are the same as Placer County. Placer County Water Agency provides water to approximately 150,000 people in Placer County located in five separate retail zones. PCWA's main source of water is from the Yuba and Bear Rivers. The supply comes from Lake Spaulding and is purchased from Pacific Gas and Electric Company. Other sources of water include the American River, the Central Valley Project, and groundwater wells. Treated and untreated water use for the year 2000 was projected as 114,525 acre-feet (Brown and Caldwell, Urban Water Management Plan, 2000).

Zone 1 is the largest of the PCWA's service area. The current sources of water for Zone No. 1 facilities comes from the PG&E's Wise/South Canal, PCWA's Boardman Canal, and the American River. This water is used to supply the Agency's Bowman, Auburn, Foothill, and Sunset Water Treatment Plants as well as raw water customers. PCWA serves wholesale treated water to the City of Lincoln and other property owner associations.

According to PCWA's urban water management plan, a water supply deficit is projected in Zone No. 1 in 2020, during years two and three of a multiple dry water year event. Under these conditions, it is anticipated that the Agency would make cutbacks to its customers. Table 2 presents the projected year 2020 water supply and demand comparison for normal, single, and multiple dry water years for Zone No. 1. Given this future supply versus demand comparison, the value of reducing water losses from the canal system is extremely important.

Table 2. Zone No. 1 Supply Reliability and Demand Comparison[6], 2020,ac-ft/yr

	Average/normal water year	Single dry water year	Multiple dry water years		
			Year 1	Year 2	Year 3
Water Supply					
PG&E Supply[1]	100,400	75,300	75,300	65,260	50,200
Middle Fork American River Supply[2]	120,000	120,000	120,000	120,000	120,000
Central Valley Project Supply[1]	35,000	26,250	26,250	22,750	17,500
Recycled Water[3]	10,000	10,000	10,000	10,000	10,000
Total Supply	265,400	221,550	221,550	208,010	187,700
Projected Water Demands, 2020					
PCWA	162,500	162,500	162,500	154,000	138,000
City of Roseville[4]	30,000	30,000	30,000	30,000	30,000
San Juan Water District[4]	25,000	25,000	25,000	25,000	25,000
Northridge Water District[5]	29,000	0	0	0	0
Total Demand	246,500	217,500	217,500	217,500	217,500
Surplus or (Deficit)	18,900	4,050	4,050	(9,490)	(29,800)

Source: Brown and Caldwell, 2000. Placer County Water Agency Urban Water Management Plan.

1. A supply reduction of 25%, 35%, and 50% for years 1 through 3 respectively is assumed.
2. It is assumed that multiple dry water years will have no impact on supply due to the amount of upstream storage.
3. Assumed amount.
4. Full contract amount is shown for 2020. Actual amount to be delivered during dry water supply years will be determined by the Agency.
5. Based on the Northridge Water Supply Contract, no amount will be supplied during dry water supply years.
6. This table contains both Zone 1 and Zone 5 supply and demand since they receive water from the same sources.

Consistency with Regional Plans. PCWA officials understand the complexities, interrelationships and importance to sustain reliable and affordable water and energy for Placer County. Current PCWA activities include, involvement in issues affecting the Lake Tahoe and Truckee River system; the American River system; the Yuba/Bear Rivers system; the Central Valley Project and Bay/Delta system; watershed management collaborations; groundwater management; PCWA water entitlements; and electric deregulation and hydroelectric divestiture. PCWA officials are in close communication with local, regional, State, and Federal officials plus private sector representatives and members of the public and community on water and energy issues affecting Placer County's present and future needs. This project is consistent with regional plans.

This project is compatible with PCWA's 2000 UWMP (Brown and Caldwell, Urban Water Management Plan, 2000) and PCWA's ongoing efforts to achieve greater water use efficiency. PCWA's Board of Directors recognizes the importance of water management and conservation programs. PCWA's adopted rules and regulations include the general policy of the water system that states in part that the PCWA will operate and maintain the water system in an efficient and economical manner and distribute and supply water as fairly and equitably as possible. In August 1999, PCWA requested assistance from DWR's Water Use Efficiency Office to assess water efficiency opportunities in Zone 1. The February 2000 DWR study (Appendix G) recommended that PCWA reduce unaccounted-for water loss.

PCWA is a member of the Water Forum. In the year 2000, the Water Forum finalized the *Water Forum Agreement*, which contains seven major elements to meet its objectives. Water conservation is the fifth major element in the Agreement. The water conservation portion of the Agreement describes each water purveyor's commitments to implement BMPs. These BMPs were derived from the original MOU developed by the CUWCC, and then customized for the Water Forum conservation agreements prepared for the individual purveyors. This project is consistent with the *Water Forum Agreement.*

Description of Impacts. The main impact of not constructing the project would be the continued loss of water to unusable destinations from the canal system. The project is within the CALFED solution area. The efficient use of California's limited water supplies is a critical local, regional, and statewide water issue. The purpose of this project is to significantly increase water use efficiency by lining water supply canals. This project will provide benefit to the Bay-Delta by ensuring that water diverted upstream is used efficiently. This project would assist in meeting CALFED goals such as:

1. Reduce water demand through "real water" conservation
2. Maximize use of available water supplies through conservation.

D-2 OUTREACH, COMMUNITY INVOLVEMENT, SUPPORT, OPPOSITION

This section describes outreach efforts that will be made by PCWA, third party impacts, employment potential, how the proposed project fits into regional plans, and the involvement of other groups and agencies.

Because this project provides a regional-wide benefit, outreach efforts will not focus on any particular customer sector. There are no tribal entities particularly impacted by this project.

Information on the results of this project will be disseminated through the PCWA's public outreach program. PCWA operates an extensive public information program and associated schools program, which provide materials, speakers, and outreach activities to the general public. Outreach activities will include publications and Web site development, public meetings, PCWA participation at community events, multimedia campaigns, interagency partnerships, corporate environmental fairs, professional trade shows, water conservation workshops and seminars and a speakers bureau.

Summaries of the results and benefits of this project will be developed by PCWA staff and made available to PCWA customers. Inserts will be included in billing mailer inserts, newsletters, and the PCWA web site.

Once the project is underway, a contractor will be selected through competitive bidding to perform the lining installation. This project will provide construction employment, though the number of employees is not known.

This project is consistent with PCWA's Water Forum Agreement and the Regional Water Authority (RWA) water use efficiency efforts. A letter of support from the RWA is included in Appendix I. there are no known parties in opposition to the project.

PART E—WATER USE EFFICIENCY IMPROVEMENTS AND OTHER BENEFITS

E-1 WATER USE EFFICIENCY IMPROVEMENTS

The goal of this project is to reduce canal system losses due to leakage to unusable destinations by 900 ac-feet per year. Section F-1 describes the approach to developing this water savings estimate.

E-2 OTHER PROJECT BENEFITS

There are multiple expected beneficial outcomes of this project. The value of those outcomes is both quantifiable and non-quantifiable. The project is within the CALFED solution area. The quantifiable and non-quantifiable benefits that will occur as a result of this project and the beneficiary of each benefit are listed in Tables 3 and 4, respectively. Project outcomes and benefits will be shared among the project's beneficiaries and will directly or indirectly contribute to CALFED goals.

Table 3. Other Quantifiable Physical Changes, Expected Benefits, and Beneficiaries

Physical change	Expected benefit	Beneficiary
Reduce unaccounted-for water PCWA can "stretch" their surface water entitlements from the Yuba, Bear, and American Rivers	900 ac-ft/year	CALFED goal-upstream water in PCWA used more efficiently
PCWA will save money on avoided costs of a new water supply	$150/acre-foot of water saved	PCWA/customer

Table 4. Non-quantifiable Benefits

Physical change	Expected benefit	Beneficiary
Decreased unaccounted-for water within the service area by this project will allow PCWA to delay the date of need to used their full water right entitlements.	1. Improved Bay-Delta ecosystem 2. Increased water supply reliability. 3. Increased water supply accounting. 4. Increased water supply reliability to water users while at the same time assuring the availability of sufficient water to meet fishery protection and restoration recovery needs. 5. More water for Bay-Delta use. 6. Energy savings as a result of less water pumped into the system. 7. Improved aquatic and terrestrial habitat in South Yuba and American Rivers. 8. More water available to meet fishery protection and restoration recovery needs now.	CALFED goal
Less water pumped into the system	Energy savings[1]	Energy provider/PCWA

(1) Not quantified for this application.

PART F – ECONOMIC JUSTIFICATION: BENEFITS TO COSTS

F-1 NET WATER SAVINGS

This project will result in total annual average net water savings of 900 ac-ft/year, or 22,500 ac-ft over a 25-year period. Listed and explained are the major analysis assumptions for net water savings for this project.

1. PCWA current water use is 114,000 ac-ft/yr, of which 75% (87,850 ac-ft/yr) is delivered by canals.
2. There is 30% (34,200 ac-ft/yr) unaccounted-for water in the canal system (MBK Engineers, Customer Water Use Study. November 2000.) It is assumed that 5% unaccounted-for water is due to evaporation losses. It is assumed that the remaining 25% of water loss (28,500 ac-ft/yr) is due to spillage and leakage from canals. It is estimated that 11,400 ac-ft/yr of the loss is due to spillage canals and 17,100 ac-ft/yr of the loss is due to leakage from unlined canals.
3. By the beginning of this project PCWA will have 152 miles of unlined canal, of which 4 miles will be lined in this project. The average unit water loss due to leakage from the unlined canals is estimated to be 112 ac-ft/yr per mile of unlined canal. Since this project will target the canals portions in the worst conditions, the savings per mile is assumed to be twice as much as the potential average savings per mile. It is estimated that on average every mile of canal that is lined for this project will save approximately 224 ac-ft of water per year. This project will save up to **896 ac-ft/yr.** For this application, the water savings estimate is rounded to **900 ac ft/yr**.
4. The life of the benefits associated with canal lining is assumed to be 25 years.

Appendix A contains the completed Benefit-Cost Summary Tables.

The water losses that the project will save currently contribute to an unusable groundwater aquifer and to evapotranspiration. The project site is located within the metamorphic belt of the Sierra Nevada, bounded by the western and eastern branches of the Bear Mountains Fault system. The Mesozoic metavolcanic rocks which underlie the project site are intensely folded and faulted with steeply east-dipping beds (Norris and Web, 1990). Covering the bedrock is a thin soil of Auburn silt loam with moderate permeability, and water flows across the surface after intense rainstorms (USDA SCS, 1980). The depth to bedrock typically ranges from 12 to 28 inches.

The geologic conditions do not qualify as an aquifer in the standard sense of the definition, "a formation which is saturated and sufficiently permeable to transmit economic quantities of water to wells and springs" (Fetter, 1988). The metavolcanics are generally impermeable and do not yield significant quantities of water to wells unless fractured (DWR Water Facts #1; Ground Water in Fractured Hard Rock) and therefore, not considered to be an aquifer according to Bulletin 118 (DWR, 2002, draft version found at www.waterplan.water.ca.gov/groundwater/118. In addition, according to a local well driller, finding a sustainable yield of water is not guaranteed. Lastly, the area is an urban area served with surface water by PCWA and groundwater is not significantly used and depended on less frequently.

Although it cannot be quantified at his time, it is likely that much of the lost water is actually lost to evapotranspiration before it reaches bedrock, based on soil characteristics

and site observations. Water leaks have been observed to flow across the land surface downhill of the canal, supporting a variety of vegetation, indicating transpiration losses. As indicated by the Soil Survey Placer County Western Part, California, because of the moderate permeability of the thin soil, much of the canal leakage cannot permeate the soil to the bedrock and is available for evapotranspiration. The remaining canal leakage is lost to the unusable groundwater in bedrock.

F-2 PROJECT BUDGET AND BUDGET JUSTIFICATION

Table 5 describes in detail the project budget, including a description and justification for each item in the budget. This budget information is entered into Table A-1 in Appendix A of this application. There are no annual costs for administration, operations, and maintenance following the completion of this project.

Table 5. Project Budget

Item		Justification	Budget
a.	Land purchase/easement	There is no land that requires purchase for this project. Easements are required for this project. The cost of easements is based on the property value of the lands for the canal system. Based on a 1999 appraisal on Antelope Canal, the value is $13,942 per acre.	$42,000
b.	Planning/design/engineering	This item includes the cost to develop the action plan, which consists project planning, design, and reviewing sections of specified canals for lining.	$46,125
c.	Materials/installation	The cost of materials and installation to Gunite 4 miles of canal lining.	$803,650
d.	Structures	Not applicable.	--
e.	Equipment purchases/rentals	Equipment rental is included in cost of materials/installation.	--
f.	Environmental mitigation/enhancement	PCWA is exempt.	--
g.	Construction administration/ overhead	This includes finalizing the contract documents, contract review, and inspection.	$20,000
h.	Legal & license fees	Not applicable	--
i.	Other	Preparation of Monitoring and Evaluation Report	$6,500
j.	Contingency	15%	$137,741
h.	Total	--	$1,056,016

F-3 ECONOMIC EFFICIENCY

The main benefit resulting from this project will be the net water savings. The economic value of these benefits is based on the value of the project's real water savings. This project is locally cost effective to PCWA. Based on the benefit-cost ratio assessment in Appendix A, tables A-1 through A-5, using project benefits and costs, the project has a benefit to cost ratio of 1.6. Since this number is greater than one, it indicates an economically justifiable project.

This section discusses the value of the project's water supply. As noted in the grant application package (page 24), the value of the project's water supply is determined in most cases by either the reduction in water supply from the most expensive source, the least–cost alternative to augment water supplies, or the revenue generated by selling water.

The application package recognizes that it is possible that a combination of benefits can occur. PCWA is a water agency that needs to augment its water supplies. Therefore, the value of the project's water supply for this application is measured by the least cost water supply alternative that may be eliminated or delayed because of the project.

Since this project targets canals carrying raw water, the value of the project's water supply does not include the cost of treatment. The only water supply project currently being planned by PCWA is the American River pump station project near Auburn, California. This project, once it is completed, will allow PCWA to divert 35,500 ac-ft of water per year from the American River. The water that would result from this project is very small in comparison to the water supply project. Some of this American River supply has been diverted on a seasonal basis through the use of a temporary pump station. This water supply project has gone through the CEQA and NEPA process and is now under engineering design. The final environmental impact report for the American River pump station project was issued in June 2002, and can accessed at http://www.mp.usbr.gov/ccao/PCWA-EIR-EIS/. The record of decision regarding the pump station project can be accessed at http://www.mp.usbr.gov/ccao/docs/ROD-AmRiverPumpSta.pdf. Board minutes that document that the project is being formally considered can be accessed at http://www.pcwa.net/level3/pdf/archived/minutes/07-11-2002.pdf. The record of decision and the board minutes are provided in Appendix H. Additional documentation regarding this project can be provided to the Department of Water Resources if requested.

The American River project is estimated to have a construction cost of $31 million. Using a 30-year project life and a 6% discount rate (capital recovery factor 0.0726) gives an annual cost of $2.3 million per year or $65 per ac-ft. The power cost to pump the water from the American River up to the elevation of the service area is $65 per ac-ft. The assumed cost of operation and maintenance is $1.5 million per year (5% of construction cost) or $42 per ac-ft. Note that the groundwater storage grant application submitted by RWA in December 2001 developed a weighted average value of raw water of $161 per ac-ft which is very similar. The value of the Auburn pump station project's raw water supply is the sum of these costs, or $162 per ac-ft. For the purposes of this grant application, the value of the saved water is assumed to $150 per ac-ft.

Table A-4b documents a portion of the cost of the alternative cost of a future water supply to arrive at an annual cost. The portion is based on the proportion of the acre -feet of water savings per year resulting from this project versus the total water supply yield for the alternative water supply project. This annual cost is equivalent to taking the $150 per ac-ft value of water times the annual water savings resulting from this project.

APPENDIX A

DWR Economic Tables

Table A-1: Capital Costs

	Capital Cost Category *(a)*	Cost *(b)*	Contingency Percent *(c)*	Contingency $ *(d)* *(bxc)*	Subtotal *(e)* *(b+d)*
(a)	Land Purchase/Easement	42,000	15%	6,300	48,300
(b)	Planning/Design/Engineering	46,125	15%	6,919	53,044
(c)	Materials/Installation	803,650	15%	120,548	924,198
(d)	Structures	--	--	--	--
(e)	Equipment Purchases/Rentals	--	--	--	--
(f)	Environmental Mitigation/Enhancement	--	--	--	--
(g)	Construction/Administration/Overhead	20,000	15%	3,000	23,000
(h)	Project Legal/License Fees	--	--	--	--
(i)	Other – Prepare Project Report	6,500	15%	975	7,475
(j)	Total **(1)** (a + ... + i)	918,275	--	137,741	1,056,016
(k)	Capital Recovery Factor: use Table 6 (25 years)	0.0782	--		
(l)	Annual Capital Costs (j x k)	71,809	--		82,580

(1) Costs must match Project Budget prepared in Section F-2.

Table A-2: Annual Operations and Maintenance Costs

Administration *(a)*	Operations *(b)*	Maintenance *(c)*	Other *(d)*	Total *(e)*
0	0	0	0	0

Table A-3: Total Annual Costs

Annual Capital Costs (1) *(a)*	Annual O&M Costs (2) *(b)*	Total Annual Costs *(c)* *(a+b)*
82,580	0	82,580

(1) From Table 1 line (l)
(2) From Table 2 Total, column (e)

Table A-4: Water Supply Benefits

Net water savings (acre-feet/year) = **900**

A-4a. Avoided Costs of Current Supply Sources

Sources of Supply *(a)*	Cost of Water ($/AF) *(b)*	Annual Displaced Supply (AF) *(c)*	Annual Avoided Costs ($) *(d) (b x c)*
Total			

A-4b. Alternative Costs of Future Supply Sources (see note 2 below)

Future Supply Sources *(a)*	Total Capital Costs ($) *(b)*	Capital Recovery Factor (1) *(c)*	Annual Capital Costs ($) *(d) (b x c)*	Annual O&M Costs ($) *(e)*	Total Annual Avoided Costs ($) *(f) (d + e)*
American River-Auburn Pump Station Project for 900 af/yr (Auburn pump station will provide a total of 35,500 ac-ft/yr. Capital costs and O&M under this project are the proportion of 900 ac-ft/yr to 35,500 ac-ft/yr).	$790,000	0.0726 (30 yrs)	$57,400	$77,600	$135,000
Total					

(1) 6% discount rate; Use Table 6- Capital Recovery Factor

(2) **Note: This annual cost is equivalent to the value of saved water times the annual water saved (900 ac-ft/yr X $150/ac-ft).**

A-4c. Water Supplier Revenue (Vendibility)

Parties Purchasing Project Supplies *(a)*	Amount of Water to be Sold *(b)*	Selling Price ($/AF) *(c)*	Expected Frequency of Sales (%) (1) *(d)*	Expected Selling Price ($/AF) *(e)* *(c x d)*	"Option" Fee ($/AF) (2) *(f)*	Total Selling Price ($/AF) *(g)* *(e + f)*	Annual Expected Water Sale Revenue ($) *(h)* *(b x g)*
Total							

(1) During the analysis period, what percentage of years are water sales expected to occur? For example, if water will only be sold half of the years, enter 50% (0.5).

(2) "Option" fees are paid by a contracting agency to a selling agency to maintain the right of the contracting agency to buy water whenever needed. Although the water may not be purchased every year, the fee is usually paid every year.

A-4d: Total Water Supply Benefits

(a) Annual Avoided Cost of Current Supply Sources ($) from 4a, column (*d*)	0
(b) Annual Avoided Cost of Alternative Future Supply Sources ($) from 4b, column (*f*)	135,000
(c) Annual Expected Water Sale Revenue ($) from 4c, column (*h*)	0
(d) Total Net Annual Water Supply Benefits ($) (a + b + c)	135,000

Table A-5: Benefit/Cost Ratio

Project Benefits ($) (1)	135,000
Project Costs ($) (2)	82,580
Benefit/Cost Ratio	1.6

(1) From Tables 4d, row (d): Total Annual Water Supply Benefits
(2) From Table 3, column (c) : Total Annual Costs

Table A-6: Capital Recovery Factor
(Use to obtain factor for Table 1, Line k or Table 4b, Column (c)

Life of Project (in years)	Capital Recovery Factor
7	0.1791
8	0.1610
9	0.1470
10	0.1359
11	0.1268
12	0.1193
13	0.1130
14	0.1076
15	0.1030
16	0.0990
17	0.0954
18	0.0924
19	0.0896
20	0.0872
21	0.0850
22	0.0830
23	0.0813
24	0.0797
25	0.0782
26	0.0769
27	0.0757
28	0.0746
29	0.0736
30	0.0726
31	0.0718
32	0.0710
33	0.0703

Life of Project (in years)	Capital Recovery Factor
34	0.0696
35	0.0690
36	0.0684
37	0.0679
38	0.0674
39	0.0669
40	0.0665
41	0.0661
42	0.0657
43	0.0653
44	0.0650
45	0.0647
46	0.0644
47	0.0641
48	0.0639
49	0.0637
50	0.0634

APPENDIX B

Gunite History

PCWA Zone 1 and Zone 3 History for Gunite Projects Funded by the Agency

Year	Zone 1 Cost	Zone 3 Cost	Total Cost	Length Gunited Zone 1, lf	Length Gunited Zone 3, lf	Total Length Gunited, lf	Total Length Gunited, miles	Cost/mile
1986	$ 93,006	$ 10,182	$ 103,188					
1987	$ -	$ -	$ -					
1988	$ 53,329	$ 16,927	$ 70,256					
1989	$ 100,000	$ 38,896	$ 138,896					
1990	$ 137,650	$ 22,110	$ 159,760					
1991	$ 152,850	$ 12,078	$ 164,928					
1992	$ 139,091	$ 16,818	$ 155,909	6,599	400	6,999	1.33	$ 117,617
1993	$ 163,574	$ 6,675	$ 170,249				0.00	
1994	$ 151,215	$ 44,649	$ 195,864				0.00	
1995	$ 150,976	$ 33,724	$ 184,700				0.00	
1996	$ 201,343	$ 7,430	$ 208,773	5,545	150	5,695	1.08	$ 193,560
1997	$ 278,048	$ 23,418	$ 301,466	7,680	491	8,171	1.55	$ 194,804
1998	$ 201,700	$ 23,906	$ 225,606	5,140	934	6,074	1.15	$ 196,115
1999	$ 315,300	$ 68,929	$ 384,229	7,026	1,132	8,158	1.55	$ 248,680
2000	$ 375,600	$ 42,100	$ 417,700	6,680	932	7,612	1.44	$ 289,734
2001	$ 931,124	$ 71,799	$ 1,002,923	15,063	1,152	16,215	3.07	$ 303,298
2002[a]	--	$ 49,666	--	9,295	737	10,032	1.90	--
Total	$3,444,806	$489,307	$3,884,447	63,028	5,928	68,956	13	

Note: Part of the variance in cost/mile is due to:

1. The wide variance in canal perimeters within PCWA's system.
2. The higher cost to apply gunite in Zone 3 than in Zone 1.
3. Changes in the bid price of gunite from year to year.

2000 GUNITE PROJECT LIST

2000 Gunite Project List	Updated 1/14/2000							
Zone 1 Locations	Lineal Footage	Square Footage	Cubic Yardage	Avg Depth Inches	Gunite Cost	Lab, Mat'l Equip	Total Cost	G.M. Number
Shirland Canal/Maidu	**724**	7,632.40	116.5	4.95	$ 28,076.50			004400331-000085001
Mid Fid Green, Windy Point	**310**	4,256.61	58.5	4.45	$ 14,098.50			004403-331000085030
Shirland @ Eagles Nest, Spill 4	**325**	3,227.25	40	4.02	$ 9,640.00			004401-331000085030
Werner Rd, Newcastle, Mid Fid Grn	**328**	4723.2	72	4.94	$ 17,352.00			004402-331000085001
Hoyer Lane, Indian Hill Rd, Boardman	**370**	5550.37	71.5	4.17	$ 17,231.50			440433100008503000
Clark Tunnel Rd, UP #17	**344**	3833	66	5.58	$ 15,906.00			442133100008503000
1280 Aub Rav Rd	**100**	1157	18	5.04	$ 5,905.00			
Agard Street, Boardman	**95**	1461	29	6.43	$ 6,989.00			004425-331-0000850-30
Perrydise Lane, Loomis, Boardman	**405**	5799.6	82	4.58	$ 19,762.00			#004429-331000850-30
Gunite Agard St, Aub	**460**	6782.62	82	3.92	$ 19,762.00			#4425-3310000850-30
Glacial Place, Barton Canal	**385**	2872.1	39.5	4.46	$ 9,519.50			#4427-331000085-030
Laird Road, Boardman Canal	**342**	5236	79.5	4.92	$ 19,159.50			#004430-000089-030
Ridge Park Drive, Boardman, Loomis	**280**	3696	60	5.26	$ 14,460.00			#004431-331000085-030
Cavitt Stallman, Stallman Canal	**173**	1789	26	4.71	$ 6,266.00			#004432-331000085-030
Yankee Hill Siphon	**49**	392	7	5.79	$ 1,687.00			#004437-331000085-030
Horseshoe Hill Rd, Larson Spill	**98**	1223	13	3.44	$ 3,133.00			#004433-331000085-030
Rock Springs @ Powerhouse Rd	**183**	1464	23	5.09	$ 5,543.00			#004438-331-000085-030
Clark Tunnel Rd #2, Caperton	**226**	3152.7	43.5	4.47	$ 10,483.50			004439-331-0000-85030
Lower Greeley, Lakeshore	400	3804	69.5	5.92	$ 16,749.50			
Boardman at Brennans	**394**	5516	90.5	5.32	$ 21,810.50			004426-331-0000-8503031
Antelope, Eng Colony at Tunnel 16	91	3163	24	2.46	$ 5,784.00			4421-331-0000-8500001
Red Ravine @ Gilardi Ln	298	3507	55	5.08	$ 11,770.00			0004424-331-0000-85001
Newcastle, Tank Overflow	300	1410	91.5	21.03	$ 22,051.50			004405
Subtotal	6680	81647.85			303139.5			
Zone 3 Gunite								
Dutch Flat/Sacto St @ UP Tracks	**259**	3842	60	5.06	$ 15,060.00			#004434-333000085-030
Dutch Flat, Ridge Rd	**129**	1722	28	5.27	$ 7,028.00			#004435-333000085-030
Bowman Feeder	**490**	3234	49	4.91	$ 12,299.00			#004436-333-0000850-

2000 GUNITE PROJECT LIST

								3031
Hayford Spill, Repair Washout	54	1450	59	13.18	$ 15,041.00			
Total	7612	91895.85						

2001 GUNITE PROJECT LIST

2001 Gunite Project List	Updated 4/12/2001								Reason for Guniting.
Zone 1 Locations	Lineal Footage	Square Footage	Cubic Yardage	Avg Depth Inches	Gunite Cost	Price/sf	Total Cost	G.M. Number	
Staggs Leap Rd, Bowman	**75**	731.00	14	5.98	**$ 3,253.50**	4.45	4972.89	1	Not Lined formerly, leaking
Indian Rock Ln, Fiddler Green	**250**	3,875.00	48	3.97	**$11,447.50**	2.95	14338.53	2	Both sides lined with old gunite, leaking
Boardman @ Gum and Pacific, Aub	**320**	4,892.00	72	4.77	**$17,352.00**	3.55	19423.93	4	part lined with old gunite, part not lined, leaking
Fiddler Green @ Players Club, Aub	**175**	2453	39	5.09	**$ 9,278.50**	3.78	12228.58	11	both sides lined with old gunite, leaking
Fiddler Green Div @ Marguerite Mine	**231**	2566	46	5.75	**$10,965.50**	4.27	12685.59	00003	not lined formerly, leaking
Portland Ave, Aub	**424**	4172	72	5.55	**$17,231.50**	4.13	19522.77	5	formerly lined, broken gunite, leaking
McCrary Pothole, Hoyer Ln	**194**	1691	48	9.10	**$11,447.50**	6.77	17269.74	7385-008	Sides were formerly lined, broken gunite, leaking
Plumbtree Ln, Antelope	**382**	4512	61	4.34	**$14,580.50**	3.23	22849.06	13	unlined canal which was leaking
Upper Greeley, Quail Hill Rd	**351**	3330.99	39	3.79	**$ 9,711.00**	2.92	11757.65	12	Half lined (one side only), leaking
Hector Rd, Lower Greeley	**250**	2817.5	46	5.29	**$11,086.00**	3.93	15331.59	9	unlined and leaking
Quail Hill Ln, Boardman	35	770	28	11.78	**$ 7,476.00**	9.71	11388.21	27	unlined, job done to secure new culvert driveway, distance includes headwalls
Stage Coach Rd, Boardman	215	3169	48	4.91	**$12,816.00**	4.04	19006.85	23	not formerly lined, leaking berm.
Boardman at Vista Drive	640	8835	121	4.44	**$32,307.00**	3.66	46426.19	25	one side lined, broken gunite, leaking
Sierra College, Boardman	685	8274.8	123	4.82	**$32,841.00**	3.97	41722.64		one side lined for about 1/2 distance, both sides lined for the rest of the distance
Caperton, Clark Tunnel Rd	400	5436	85	5.04	**$22,561.50**	4.15	37009.95	16	not formerly lined, leaking
Antelope @ Boulder Ridge	390	4598	62	4.37	**$16,554.00**	3.60	21490.56	29	one side lined, broken gunite, leaking
Lyall Flume, headwall and foot wall	105	1169.7	25	6.92	$ 6,675.00	5.71	6675		flume conversion, environmental work already done
Leisa Ln, Antelope	**175**	2019.5	22	3.53	**$ 6,050.00**	3.00	6678.27		formerly unlined, leaking
Niederheiser Gunite	**888**	12325.44	241	6.32	**$64,441.50**	5.23	113649.04		one side lined, leaking, blowouts occurred in this stretch, low berm, environmental work already complete
Caperton Canal @ Sierra College	**650**	8604.87	127	4.76	**$33,775.50**	3.93	40183.38	00017	formerly unlined and leaking
Freeman Canal @ Wesley	**260**	2007	19	3.07	**$ 5,225.00**	2.60	5860.6	00033	lined with broken gunite, leaking
Eastside Canal, Rippey and Taylor	**500**	2861	29	3.23	**$ 7,837.50**	2.74	9523.88	00032	lined with broken gunite, leaking
Caperton Canal @ Caperton Ct	**850**	10863	144	4.28	**$38,314.50**	3.53	44766.07	00018	One side lined for 1/2 length, unlined for rest, leaking

2001 GUNITE PROJECT LIST (continued)

2001 Gunite Project List	Updated 4/12/2001								Reason for Guniting.
Zone 1 Locations	Lineal Footage	Square Footage	Cubic Yardage	Avg Depth Inches	Gunite Cost	Price/sf	Total Cost	G.M. Number	
Antelope Canal @ Winters Drive	**650**	7463	75	3.26	**$20,625.00**	2.76	93877.93	00015	one side lined, leaking
Caperton @ Harrington Prop	**275**	4017	63	5.08	**$16,821.00**	4.19	44573.99	00038	lined one side, broken gunite, leaking
Lower Banvard, Ridge Rd, Tie in	**86**	1013.08	28	8.79	**$ 7,482.50**	7.39	8631.28	00036	siphon tie in, checkboard structure tied in.
Antelope Canal, Boulder Ridge Rd	**302**	2278.44	47	6.61	**$12,415.50**	5.45	14576.61	00035	unlined and leaking
Antelope Stub, Boulder Ridge Rd	**636**	5819.4	87	4.82	**$23,247.50**	3.99	28717.67	00014	unlined and leaking
Shirland Canal Spill #5	**100**	1307	29	7.19	**$ 7,743.00**	5.92	9561.69	00039	lined with broken gunite, leaking
Part was spill channel									
Red Ravine, Penryn Estates	**433**	5455.8	84	4.96	**$22,294.50**	4.09	27541.6	00019	unlined and leaking
Antelope, Boulder Ridge & Delmar	**775**	7254	73	3.24	**$19,937.50**	2.75	ok	00015	Both sides lined for part of length, rest was one side gunite only, leaking
Caperton @ Spring Ln, Armes Ln	**200**	2906	**51**	5.69	$ 13,617.00	4.69	ok	00038	Lined one side, and leaking
Red Ravine, Penryn Estates	**25**	363.5	6	5.35	**$ 1,602.00**	4.41	4060.29	00020	not lined, leaking
Antelope, Boulder Ridge Rd	**525**	5277.5	**64**	3.93			ok	00015	one side lined, leaking
Antelope	**581**	5693.8	**77**	4.38			ok	00015	one side lined, leaking
Caperton u/s of Spill 9	**367**	4837.06	**83**	5.53	**$22,027.50**	4.55	40455.85	00043	unlined and leaking
Caperton @ Spring Ln, Armes Ln	**120**	1784.4	**25**	4.54	**$ 6,675.00**	3.74	ok	00038	lined one side, leaking
Newcastle, Chantry Hill Rd	**222**	2379.84	**41**	5.51	**$11,137.50**	4.68	14155.29	00042	unlined and leaking
Caperton @ Caperton Ct, Spill 9	**225**	2619	**38**	4.64	**$10,012.50**	3.82	ok	00043	unlined and leaking
Dutch Ravine @ Marshall Spill	**452**	7738.24	**122.5**	5.13	**$32,707.50**	4.23	38652.31	00010	Lined one side, leaking
Red Ravine, Moonshine Ln	**144**	1666	**31**	5.93	**$ 8,143.50**	4.89	10082.2	00021	part lined, prart unlined, leaking
Boardman @ Hoguertel/Musso	**500**	7790	**120**	4.99	**$32,112.00**	4.12	41476.77	00044	
Total Zone 1	15,063	179,637			$671,829.00		$931,124.45		
Zone 3 Gunite									

2001 GUNITE PROJECT LIST (continued)

2001 Gunite Project List	Updated 4/12/2001								Reason for Guniting.
Zone 1 Locations	Lineal Footage	Square Footage	Cubic Yardage	Avg Depth Inches	Gunite Cost	Price/sf	Total Cost	G.M. Number	
Cedar Creek @ Ridge Rd	94	719	8	3.61	**$ 2,280.00**		5901.54		
Boardman @ Rollins Lake Rd	110	1292.5	11	2.76	**$ 3,135.00**		6174.31		
Boardman @ Magra Rd	85	538	5	3.01	**$ 1,425.00**		OK		
Boardman @ Killmer Spill	182	2262	15	2.15	**$ 4,275.00**		4886.12		
Boardman @Weimar Crossroads	190	3060	59	6.25	**$16,343.00**		21039.56		
Boardman @ Ben Taylor	130	1843	26	4.57	**$ 7,352.00**		8869.28		
Clipper Gap, Boardman, Bancroft	26	66	11	54.00	**$ 3,135.00**		4164.15		
Cedar Creek @ Ridge Rd	335	4550.64	63	4.45	**$17,312.50**		20764.23		
Zone 3 Total	1152	14331.14			55257.5		71799.19		
Overall Total for 2001	16215	193968					1002923.6		
Total in Miles	3.07								

2002 GUNITE PROJECT LIST

Zone 1 Locations	Lineal Footage	Square Footage	Cubic Yardage	Avg Depth Depth (inches)	Gunite Cost ($)	Price/sf ($/sf)	Total Cost[a] ($)	G.M. Number	Date
Boardman/Palm/Lincoln wy	390	6,540	86.0	4.26	$22,962	3.51	$26,878	22196	1/8/2002
Freeman/Palm	280	1,316	10.0	2.46	$2,750	2.09	$3,982	22197	1/10/2002
Shirland/Portland Ave	990	19,553	198.5	3.29	$53,000	2.71		2204	1/18,22,23,24/02
Fiddler Green Div, Margarite Mine and 49	422	5,625	99.5	5.73	$26,567	4.72	$30,975	22198	2/5/2002
Rock Springs, Rock Springs Rd	233	1,812	42.5	7.60	$11,688	6.45	$15,030	22503	
Newcastle, Kellogg St	415	4,333	38.5	2.88	$10,588	2.44	$11,348	22509	
Shirland, Rimview Cir	663	4,594	38.0	2.68	$15,813	3.44	$17,550	22499/001	
Newcastle, Kellog St	460	3,404	29.0	2.76	$7,975	2.34	$8,845	22506/001	
Antelope Canal, Newcastle	310	4,352	78.0	5.81	$20,826	4.78	$29,784	22512/001	
Antelope Canal, Sierra College	225	2,444	39.5	5.24	$10,547	4.32	$14,666	22710	2/21/2002
Red Ravine @ Penryn Est	292	3,720	58.5	5.10	$15,620	4.20	$18,999	22717	3/5/2002
Antelope @ English Colony	308	3,449	46.0	4.32	$12,650	3.67	$17,502	22715	3/1/2002
Antelope @ Sierra College	210	2,465	38.0	4.99	$10,146	4.12	$14,566	22714	2/25/2002
Red Ravine @ Penryn Est	245	3,190	50.0	5.08	$13,350	4.19	$14,542	22718	
Boardman @ Brennans Rd	338	4,840	75.5	5.05	$20,159	4.16	$24,722	24164	
Boardman @ Brennans Rd	245	3,379	48.0	4.60	$12,816	3.79	$19,754	24165	
Boardman @ Laird Pump	408	6,442	100.5	5.05	$26,834	4.17	$29,974	24166	
Boardman @ Sierra College	425	5,368	81.5	4.92	$21,761	4.05	$25,293	25100	
Boardman @ Sierra College	175	2,382	39.5	5.37	$10,547	4.43	$12,209	25143	3/22/2002
Boardman @ Laird Rd	671	9,300	131.2	4.57	$35,111	3.78	$43,050	24167	3/28/2002
Lower Greeley	100	1,216	17.5	4.66	$4,813	3.96	$5,800	32304	8/8/2002
Boardman: Bowman Rd, Rhodes Vie105w	105	1,517	29.0	6.19	$7,743	5.10		35270	
Boardman, Meadow Ln Brennans	465	6,719	113.5	5.47	$30,305	4.51		34217	10/2 & 3/02
Caperton, Armes Ln	100	1,336	24.5	5.94	$6,542	4.90		35478	10/8/2002
Rock Springs @ Mtn View Ln	190	959	17.0	5.74	$4,675	4.87			10/29/2002
Meadow Lane Bridge, Boardman	10	300	12.0	12.96	$3,204	10.68		35268	10/29/2002
Rock Springs, Los Puentes Rd	620	3,608	42.5	3.82	$11,348	3.15		34219	
Total Zone 1	9,295				$430,332				
Total in Miles	1.76								

Zone 3									
Cedar Creek @ Ridge Rd	135	2,114	29.5	4.52	$8,172	3.87	$9,505	24896	4/2/2002
Cedar Creek @ Ridge Rd	150	2,431	48.5	6.46	$13,435	5.53	$15,811	24897	
Long Ravine Spillway	117	1,874	39.5	6.83	$10,942	5.84	$14,212	24900	4/10/2002
Bowman Feeder	335	2,549	29.5	3.75	$8,408	3.30	$10,138	24163	4/18/2002

2002 GUNITE PROJECT LIST

Total Zone 3	737				$40,955		$49,666		
Total Zone 1 plus Zone 3	10,032				$471,287				
Total in Miles	1.90								

APPENDIX C

Project Manager Resume

Mike Nichol

Work Experience

Placer County Water Agency - July 1989-Present

Increasing responsibility from Resident Engineer overseeing construction of a 15 mgd water treatment plant expansion and a 10 million gallon water storage tank to Director of Field Services responsible for canal operations and maintenance, treated water pipeline maintenance, warehouse and fleet maintenance. Over 10 years associated with Placer County Water Agency's raw water distribution system.

Guy F. Atkinson - April 1984-July 1989

Increased responsibility from Field Engineer to Project Engineer on dam sites in Utah and California, and a project in Virginia building islands.

Nevada Bureau of Mines and Geology - 1980-1982

Research Assistant performing Earthquake Hazard Mapping around Reno, Nevada.

Education

Master of Science: Geological Engineering from McKay School of Mines, University of Nevada-Reno, 1983.

Master of Business Administration: University of Nevada-Reno, 1983.

Bachelor of Science: Civil Engineering, University of the Pacific, 1980.

Certifications

Registered Professional Engineer.

State of California Dept of Health Services Grade 3 Water Treatment Plant Operator.

American Water Works Association Grade 3 Water Distribution Operator.

Miscellaneous

Member of AWWA Water Distribution Operator Certification Committee

APPENDIX D

Placer County Water Agency Act

CHAPTER 81. PLACER COUNTY WATER AGENCY ACT

Sec.

PLACER COUNTY AGENCY ACT

An act to create the Placer County Water Agency, prescribing its powers and duties, providing for its organization, operation, and management, and authorizing the acquisition of property and works to carry out the purposes of the district, authorizing the incurrence of indebtedness, providing for issuance of bonds, providing for the levy and collection of taxes for the payment of such indebtedness, providing for the issuing of bonds payable solely from revenues of the district, providing for the levy and collection of taxes for the payment of general district expenses and for cooperation and contracts with any entity. (Stats.1957, c. 1234, p. 2520.)

§ 81-1. Creation; name; territory

Section 1. A county water agency is hereby created to be known as the Placer County Water Agency. Said agency shall consist of all the territory lying within the exterior boundaries of the County of Placer. Said agency shall be a "local agency" as defined by Section 54307 of the Government Code. (Stats.1957, c. 1234, p. 2520, § 1, as amended Stats.1959, c. 815, p. 2822, § 1.)

Cross References

Boundaries of Placer County, see Government Code § 23131.

Law Review Commentaries

Evolution of forms of water users' organizations in California. Albert T. Henley (1957) 45 C.L.R. 665.

Library References

Waters and Water Courses ⇐224. C.J.S. Waters § 319.

§ 81-2. Definitions

Sec. 2. As used in this act, the following words shall have the following respective meanings unless the context indicates otherwise:

(a) "Agency" is the Placer County Water Agency.

(b) "County" is the County of Placer of the State of California.

(c) "United States" is the United States of America including any one or more of the bureaus, commissions, divisions, departments, boards, agencies, and officers of the United States of America.

(d) "State" means the State of California including any one or more of the bureaus, commissions, divisions, departments, boards, agencies, and officers of the State of California.

(e) "Work" or "works" includes dams and dam sites, reservoirs and reservoir sites, and all conduits and other facilities useful in the control, conservation, diversion and transmission of water; power generation and transmission facilities; any replacement, renovation or improvement of the foregoing; and all land, property, franchises, easements, rights-of-way and privileges necessary or useful to operate or maintain any of the foregoing.

(f) "District" means any of the following: irrigation districts, county water districts, water conservation districts, water districts, soil conservation districts, municipalities, towns, flood control districts, and any other districts or political subdivisions of the state empowered by law to appropriate water and deliver water to water users.

(g) "Public agency" means the United States, the state or any district.

(h) "Elector" or "qualified elector" or "voter" or "qualified voter" means any elector of the county qualified under the laws of the State of California to vote in the county at general elections.

(i) "May" is permissive and "shall" is mandatory.

(j) "Board" means the board of directors of the agency.

(k) "Agency election" means the election provided for in Section 7.1 held in accordance with the provisions of the Uniform District Election Law.

(Amended by Stats.1974, c. 396, p. 980, § 1.)

§ 81-3. Body politic and corporate; general powers; exercise of powers

Sec. 3. The Placer County Water Agency is hereby declared to be and is a body politic and corporate, and as such shall have, among others, the powers enumerated in this act and such other powers as the law may provide. The powers of the agency shall, except as otherwise provided, be exercised by the board of directors thereof. (Stats.1957, c. 1234, p. 2521, § 3.)

Library References

Waters and Water Courses ⇐=228. C.J.S. Waters § 331.

§ 81-3.1 Perpetual succession

Sec. 3.1. The agency shall have perpetual succession. (Stats.1957, c. 1234, p. 2521, § 3.1.)

Library References

Waters and Water Courses ⇐=227. C.J.S. Waters § 329.

§ 81-3.2 Seal

Sec. 3.2. The agency shall have the power to adopt a seal and alter it at its pleasure. (Stats.1957, c. 1234, p. 2521, § 3.2, as amended Stats.1959, c. 815, p. 2823, § 2.)

§ 81-3.3 Actions

Sec. 3.3. The agency shall have the power to sue and be sued, except as otherwise provided herein or by law, in all actions and proceedings in all courts, commissions, boards and tribunals of competent jurisdiction. (Stats.1957, c. 1234, p. 2521, § 3.3.)

PLACER COUNTY AGENCY ACT

§ 81-3.4. Eminent domain

Sec. 3.4. The agency shall have the power of eminent domain to acquire within or without the agency any property necessary for carrying out the powers and purposes of the agency, except that the agency shall not have the power to acquire by condemnation publicly owned property held or used for the development, storage or distribution of water for public use.

In lieu of compensation and damages for the taking or damaging of any public utility facility which must be replaced by the public utility to provide service to the public equivalent to that provided by the facility taken or damaged, the agency shall pay to the public utility owning such facility its actual cost incurred to replace in kind the facility so taken or damaged, less proper deductions for depreciation, together with its actual cost incurred to rearrange or rehabilitate the facilities of such public utility not taken or damaged but required to be rearranged or rehabilitated by reason of such taking or damaging.

No action in eminent domain to acquire property or interests therein outside the boundaries of the County of Placer shall be commenced unless the board of supervisors of each affected county has consented to such acquisition by resolution.

(Amended by Stats.1975, c. 581, p. 1168, § 9.)

Law Revision Commission Comment
1975 Amendment

The deleted portions of Section 3.4 [Water C.App. § 81-3.4] are superseded by provisions of the Eminent Domain Law. See Code Civ.Proc. §§ 1230.020 (uniform procedure), 1240.610 et seq. (more necessary public use), 1240.010 (declaration that a use is a public use is unnecessary), 1240.110 (right to take any property or any right or interest in property) 1250.210 (identification of plaintiff). See also Code Civ.Proc. §§ 1240.040 and 1245.210 et seq. (resolution of necessity), 1235.170 ("property" defined).

Historical and Statutory Notes

1975 Legislation.

Operative effect of 1975 amendment, see note under § 102-7.

Library References

Recommendations relating to condemnation law and procedure in special districts. 12 Cal.L.Rev.Comm. Reports 1101 (1974).

§ 81-3.5 Property acquisition; use; disposal

Sec. 3.5. The agency shall have the power to take absolutely or on condition, by grant, purchase, gift, devise, or lease, with or without the privilege of purchasing, or otherwise, real and personal property of any kind, or any interest in real or personal property, within or without the agency, necessary to the full exercise of its powers, and to hold, use, enjoy, and to lease or dispose of the same subject to the limitations set forth in Section 11. (Stats.1957, c. 1234, p. 2522, § 3.5.)

Library References

Waters and Water Courses ⇐225½. C.J.S. Waters § 321.

§ 81-3.6 Contracts; employment of labor; necessary acts; construction

Sec. 3.6. The agency shall have the power to make contracts, employ labor and to do all acts necessary for the full exercise of its purposes and powers. The board may cause construction or other work to be performed or carried out by contracts or by the agency under its own superintendence. (Stats.1957, c. 1234, p. 2522, § 3.6.)

Library References

Waters and Water Courses ⇐223½. C.J.S. Waters § 321.

§ 81-4. Availability of water

Sec. 4. The agency shall have the power as limited in this act to do any and every lawful act necessary in order that sufficient water may be available for any present or future beneficial use or uses of the lands or inhabitants within the agency, including, but not limited to, irrigation, domestic, fire protection, municipal, commercial, industrial, recreational, and all other beneficial uses and purposes. (Stats.1957, c. 1234, p. 2322, § 4.)

Cross References

Appropriation of water, see Water Code § 1200 et seq.
Beneficial use of water, see Const. art. 14, § 3; Water Code §§ 100, 101, 1240.

§ 81-4.1. Construction, operation and maintenance of hydroelectric works; sale of energy; facilities for generation transmission, distribution, sale and lease of electric power

Sec. 4.1. The agency shall have the power to construct, operate, and maintain works to develop hydroelectric energy as a means of assisting in financing the construction, operation, and maintenance of its projects for the control, conservation, diversion, and transmission of water and to enter into contracts for the sale of that energy for a term not to exceed 50 years. The energy may be marketed to any public agency, private entity, person, or the federal or state government. The agency shall also have the power to acquire, operate, lease, and control facilities for the generation, transmission, distribution, sale, and lease of electric power, including sale to municipalities, public utility districts, or persons, all in the same manner as irrigation districts formed under the Irrigation District Law (Division 11 (commencing at Section 20500) of the Water Code).

The powers granted by this section shall not include, and nothing in this act shall be construed to allow, the acquisition of property or facilities already employed in the generation of hydroelectric energy, except by mutual agreement between the agency and the owner and operator of the property or facilities.

The powers granted by this section shall not include, and nothing in this act shall be construed to allow, the retail sale of hydroelectric energy by the agency of any power generated by the Middle Fork Project during the term of the current contract for the sale of the hydroelectric energy from that project.

(Amended by Stats.1982, c. 252, p. 824, § 1.) Sec GC 22115

§ 81-4.2 Flood control; water conservation

Sec. 4.2. The agency shall have the power to control the flood and storm waters of the agency and the flood and storm waters of streams that have their sources outside of the agency, which streams and floodwaters flow into the agency, and to conserve such waters for beneficial and useful purposes of said agency by spreading, storing, retaining and causing to percolate into the soil within or without said agency, or to save or conserve in any manner all or any of such waters and protect from damage from such flood or storm waters the watercourses, watersheds, public highways, life and property in said agency, and the watercourses outside of the agency of streams flowing into the agency. (Stats.1957, c. 1234, p. 2322, § 4.2.)

Cross References

Beneficial use of water, see Const. art. 14, § 3; Water Code §§ 100, 101, 1240.

Library References

Levees and Flood Control ⇐5-7. C.J.S. Levees and Flood Control § 13.

§ 81-4.3 Storage of water; conservation and reclamation; appropriation; actions; prevention of unlawful exportation; contamination or pollution

Sec. 4.3. The agency shall have the power to store water in surface or underground reservoirs within or outside of the agency for the common benefit of the agency; to conserve and reclaim water for present and future use within the agency; to appropriate and acquire water and water rights, and import water

into the agency and to conserve and utilize, within or outside of the agency, water for any purpose useful to the agency; to commence, maintain, intervene in, defend or compromise, in the name of the agency in behalf of the landowners therein, or otherwise, and to assume the costs and expenses of any action or proceeding involving or affecting the ownership or use of waters or water rights, within or without the agency, used or useful for any purpose of the agency or of common benefit to any land situated therein, or involving the wasteful use of water therein; to commence, maintain, intervene in, defend and compromise and to assume the cost and expenses of any and all actions and proceedings now or hereafter begun; to prevent interference with or diminution of, or to declare rights in the natural flow of any stream or surface or subterranean supply of waters used or useful for any purpose of the agency or of common benefit to the lands within the agency or to its inhabitants; to prevent unlawful exportation of water from said agency; to prevent contamination, pollution or otherwise rendering unfit for beneficial use the surface or subsurface water used in said agency, and to commence, maintain and defend actions and proceedings to prevent any such interference with such waters as may endanger or damage the inhabitants, lands, or use of water in, or flowing into, the agency; except that the agency shall have no power to intervene or take part in, or to pay the costs or expenses of, actions or controversies between the owners of lands or water rights which do not affect the interests of the agency. (Stats. 1957, c. 1234, p. 2522, § 4.3.)

Cross References

Appropriation of water, see Water Code § 1200 et seq.

Library References

Waters and Water Courses ⇐10, 122, 196, 256. C.J.S. Waters §§ 172, 232, 359.

§ 81-4.4 Acquisition of works, waters and water rights; payments in lieu of taxes

Sec. 4.4. The agency shall have the power within or outside the agency to construct, purchase, lease, or otherwise acquire works, to purchase, lease, appropriate or otherwise acquire water and water rights, useful or necessary to make use of water for any purposes authorized by this act, and to make payments in lieu of taxes to any or all political subdivisions, including but not limited to school districts, upon works acquired by the agency situate within such political subdivisions. (Stats. 1957, c. 1234, p. 2523, § 4.4, as amended Stats.1967, c. 117, p. —, § 1, urgency, eff. May 9, 1967.)

Library References

Waters and Water Courses ⇐130. C.J.S. Waters § 228.

§ 81-4.5 Operation, maintenance, etc., of works

Sec. 4.5. The agency shall have the power to operate, repair, improve, maintain, renew, replace and extend all works and property of the agency. (Stats.1957, c. 1234, p. 2523, § 4.5.)

Library References

Waters and Water Courses ⇐244. C.J.S. Waters § 350.

§ 81-4.6 Investigations

Sec. 4.6. The agency shall have the power to carry on technical and other necessary investigations, make measurements, collect data, make analyses, studies, and inspections pertaining to water supply, water rights, control of flood and storm waters, and use of water both within and without said agency relating to watercourses or streams flowing in or into said agency. (Stats.1957, c. 1234, p. 2523, § 4.6.)

Library References

Administrative Law and Procedure ⇐343-347.

C.J.S. Public Administrative Bodies and Procedure § 79.

§ 81-4.7 Conduits along or across streets, railways, ditches, etc.

Sec. 4.7. The agency shall have the power to construct its pipes, pipelines, flumes and tunnels and other conduits, including facilities for the transmission of electric energy to the works of the agency, along, under or across any public road, street, alley, avenue, highway or sidewalk, or across any stream of water, watercourse, railway, canal, ditch, or flume which the route of said pipes, pipelines, canals, flumes, tunnels, or other conduits may intersect or cross, except that such works shall be constructed in such manner as to afford security for life and property and the agency shall restore at its own expense any such crossings and intersections to their former state as nearly as may be, or to an extent which does not unnecessarily impair their usefulness. Every company, municipality, or district whose right of way shall be intersected or crossed by said pipes, pipelines, canals, flumes, tunnels or other conduits shall unite with the agency in forming said intersections and crossings and grant the rights therefor. (Stats.1957, c. 1234, p. 2523, § 4.7.)

Cross References

Rights of way, see Civil Code § 801 et seq.

Library References

Waters and Water Courses ⇐242.
C.J.S. Waters § 340.

Sovereign Immunity study, Cal.Law Revision Comm.(1963) Vol. 5, p. 93.

§ 81-4.8 Right of way upon public lands

Sec. 4.8. There is hereby granted to the agency the right of way for the location, construction, and maintenance of works authorized under the provisions of this act in, over and across public lands of the State of California, not otherwise disposed of or in use, but not in any case exceeding an area which is necessary for the construction of such works and adjuncts or for the protection thereof. Whenever any selection of a right of way for such works or adjuncts thereto is made by the agency, the board shall transmit to the State Lands Commission, the Controller of the State and the recorder of the county in which the selected lands are situated, a plat of the lands selected, giving the extent thereof and the uses for which the same is claimed or desired, verified by the board. If the State Lands Commission approves the selections so made it shall endorse its approval upon the plat and issue to the agency a permit to use such right of way and lands. (Stats. 1957, c. 1234, p. 2524, § 4.8.)

Cross References

Rights of way, see Civil Code § 801 et seq.

§ 81-4.9 Relocation of streets, railroads, etc.; proceedings

§ 81-4.9. Repealed by Stats.1975, c. 585, p. 1242, § 17

Law Revision Commission Comment
1975 Repeal

Section 4.9 [Water C.App. § 81-4.9] is superseded by Section 1240.330 of the Code of Civil Procedure and Section 861 of the Public Utilities Code.

Historical and Statutory Notes

Operative effect of 1975 repealer, see note under § 40-39.

Library References

Recommendations relating to condemnation law and procedure in special districts. 12 Cal.L.Rev.Comm. Reports 1101 (1974).

§ 81–4.10 Reimbursement of county for expenses

Sec. 4.10. The agency may reimburse the county for any funds expended by the county in investigations, elections, or other acts incidental to the establishment of the agency. (Stats.1957, c. 1234, p. 2524, § 4.10.)

Library References

Waters and Water Courses ⇐231. C.J.S. Waters § 337.

§ 81–4.11 Contracts for sale of right to use falling water for electric energy purposes

Sec. 4.11. In connection with the construction and operation of the works of the agency, the agency shall have the power to contract for the sale of the right to use falling water for electric energy purposes with any public agency or private entity engaged in the retail distribution of electric energy, for a term not to exceed 50 years. (Stats.1957, c. 1234, p. 2525, § 4.11, as amended Stats.1959, c. 815, p. 2824, § 6.)

Library References

Waters and Water Courses ⇐225½. C.J.S. Waters § 321.

§ 81–4.12 Contracts with private water companies for water service

Sec. 4.12. The agency shall have power to enter into contracts with any private water company formed and existing exclusively to provide water service within the agency whenever such contract appears to the board to be in the public interest. (Added Stats.1959, c. 815, p. 2824, § 7.)

Library References

Waters and Water Courses ⇐225½. C.J.S. Waters § 321.

§ 81–4.13 Indebtedness

Sec. 4.13. The agency shall have power to borrow money, incur indebtedness and issue bonds or other evidence of such indebtedness in the manner provided herein. (Added Stats.1959, c. 815, p. 2824, § 8.)

§ 81–4.14 Repayment of borrowed money

Sec. 4.14. When authorized by the board the agency shall have the power to borrow money with repayment to commence at a future date from revenues of the agency. (Added Stats.1959, c. 815, p. 2824, § 8.5.)

§ 81–4.15 Borrowing with repayment from future revenues

Sec. 4.15. Notwithstanding the provisions of Section 13 of this act and in addition to the other powers provided in this act, the agency by agreement authorized by resolution of the board may incur an indebtedness for the agency or for any zone or participating zones designated in such resolution for acquisition or construction of any works or property, including water or water rights, for any purposes of the agency, to be repaid and liquidated as to both principal and interest only from revenues designated in such agreement which are produced from the collection of rates, tolls or charges for any water or services or facilities furnished, sold or leased by the agency, provided the proposal to incur such indebtedness is first approved at an election at which there is submitted to the qualified voters of the agency, if the indebtedness is to be incurred for the agency, or to the qualified voters of the zone or participating zones, if the indebtedness is to be incurred for a zone or participating zones, the proposition whether such indebtedness shall be incurred. Such election shall be held as nearly as practicable in accordance with the procedures set forth in Section 15 of this act except that the incurring of such indebtedness shall be approved if a majority or more of the votes cast on such proposition are in favor thereof. In the agreement incurring said indebtedness, the agency may pledge to the payment of the amounts to become due thereunder all or any part of the revenue from which such amounts are payable. In connection with such pledge the agreement may contain such covenants, promises, restrictions and provisions as the agency may deem necessary or desirable, including, but not limited to, covenants, promises, restrictions and provisions relating to (a) the operation, maintenance and preservation of the works or property so acquired or constructed, (b) the rates, tolls or charges from which said indebtedness is to be repaid, (c) the incurring of additional indebtedness payable from the revenue pledged, and (d) the establish-

ment, maintenance and use of reserve funds, maintenance and operation funds, funds for the payment of amounts due under the agreement and other funds for the security of the one to whom the indebtedness is owed. (Added Stats.1965, c. 854, p. 2452, § 1, urgency, eff. July 6, 1965, as amended Stats.1967, c. 117, p. —, § 2, urgency, eff. May 9, 1967.)

Library References

Waters and Water Courses ⟨⇒230(1) et seq. C.J.S. Waters § 323.

§ 81-5. Powers of agency

Sec. 5. The agency shall have the power:

(a) To sell, lease or otherwise dispose of water or any rights to the use of the works of the agency; provided, however, that no such sale, lease or disposal shall be made for use outside the agency unless the board determines that the water or works involved will not be needed for use within the agency.

(b) To fix, revise, and collect rates and charges for the services, facilities, or water furnished by it.

(c) To establish rules and regulations to protect the public health in the operation of the works, to provide for the sale, distribution and use of water and the services and facilities of the works, to provide that service, facilities, or water shall not be furnished to persons against whom there are delinquent charges, and to provide for charges for the restoration of service.

(d) To provide that charges for any of its services or facilities may be collected together with and not separately from the charges for other services or facilities rendered by it, or it may contract that all such charges be collected by any other district or private or public utility, and that such charges be billed upon the same bill and collected as one item.

(e) To provide that if all or part of a bill is not paid, the agency may discontinue any or all services or facilities for which the bill is rendered.

(f) To provide for the collection of charges. Remedies for their collection and enforcement are cumulative and may be pursued alternatively or consecutively as the agency determines.

(g) To provide for a basic penalty of not more than 6 percent for nonpayment of the charges within the time and in the manner prescribed by it, and in addition to provide for a penalty of not exceeding one-half of 1 percent per month for nonpayment of the charges and basic penalty. The agency may provide for the collection of such penalties. (Stats.1957, c. 1234, p. 2525, § 5, as amended Stats.1959, c. 815, p. 2824, § 9; Stats.1965, c. 972, p. 2389, § 1.)

Library References

Waters and Water Courses ⟨⇒257(1, 2). C.J.S. Waters § 363.

§ 81-5.1 Contracts with districts; purposes

Sec. 5.1. The agency may enter into contracts with any district for any of the following purposes:

(a) The lease, purchase, or other acquisition by the agency of any of the works of such district.

(b) The construction of works by the agency for the conservation, regulation or transmission of water for the benefit of such district or the furnishing or sale by the agency to such district or by such district to the agency of water or a water supply for any purpose.

(c) The sale, lease, or other disposition of water, a water supply, water rights, or water storage facilities or any interests in any thereof for any purpose by the agency to any district or by any district to the agency.

(d) The operation of works and the delivery of water by the agency to any district or by any district to the agency.

Such contracts shall be executed in accordance with the laws governing such districts. (Stats.1957, c. 1234, p. 2525, § 5.1, as amended Stats.1959, c. 815, p. 2824, § 10.)

Library References

Waters and Water Courses ⟨⇒254. C.J.S. Waters § 361.

§ 81-5.2 Suspension of delivery of water to delinquent district

Sec. 5.2. The agency in its discretion may suspend delivery of water conserved by the agency or obtained by or on behalf of the agency to any district during the period in which said district is delinquent in its payment for or obligations due in respect to such water under any contract entered into by it with the agency. (Formerly § 81-5.3, Stats.1957, c. 1234, p. 2526, § 5.3. Renumbered § 81-5.2, and amended Stats. 1959, c. 815, p. 2825, § 11.)

§ 81-5.3 Renumbered § 81-5.2 and amended. Stats.1959, c. 815, p. 2825, § 11

§ 81-5.3. Standby or availability charge

Sec. 5.3. The agency may fix a water service standby or immediate availability charge to be applied on an area, or frontage, or parcel basis, or a combination thereof, to such areas within the agency to which water service is made available for any purpose by the agency, whether the water service is actually used or not, provided, that such charge may not be levied against unimproved property permanently dedicated to public transportation. The agency may establish schedules varying such charge according to the land uses and the degree of availability or quantity of use of such water service to the affected lands, and may restrict such charge to lands lying within one or more zones or areas of benefits established within such agency. The agency may not, however, fix a charge in excess of ten dollars ($10) per acre per year or in excess of five dollars ($5) per year for a parcel of less than one acre.

The agency may collect the standby or availability charge by billing the charged lands on a fiscal year basis or by other means available.

The agency may collect the standby or availability charge as a part of the annual general county tax bill provided the agency furnishes in writing to the board of supervisors and to the county auditor the description of each parcel for which a charge is to be billed together with the amount of the charge applicable to each parcel in sufficient time to meet the schedule established by the county for inclusion of such items on the county general tax bill. The parcel description may be the parcel number assigned by the county assessor to the parcel. In such cases, the standby or availability charge shall become a lien against the parcel of land to which it is charged in the same manner as the county general taxes. Penalties may be collected for late payment of the standby or availability charge or the amount thereof unpaid in the manner and at the same rates as that applicable for late payment or the amount thereof unpaid of county general taxes.

If the agency collects standby charges through the county general tax bill, the amount of the standby charge and any applicable penalty shall be stated on the tax bill separately from all other taxes, if practicable.

(Added by Stats.1971, c. 120, p. 163, § 1, eff. June 4, 1971.)

Library References
Waters and Water Courses ⇐183½.
C.J.S. Waters § 243.

See GC 54984.1 for Uniform Standby Charge Procedures Act

§§ 81-5.4 to 81-5.7 Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed sections, derived from Stats.1957, c. 1234, p. 2526, §§ 5.4-5.7, related to rights and liabilities of member units.

§ 81–6. Cooperation with United States; reclamation

Sec. 6. The agency shall have the power to cooperate and contract with the United States under the Federal Reclamation Act of June 17, 1902,[1] and all acts amendatory thereof and supplementary thereto or any other act of Congress heretofore or hereafter enacted permitting cooperation or contract for the purposes of construction of works, whether for irrigation, drainage, or flood control, or for the acquisition, purchase, extension, operation and maintenance of such works, or for a water supply for any purposes, or for the assumption as principal or guarantor of indebtedness to the United States, or for carrying out any of the purposes of the agency, and for said purposes the agency shall have, in addition to the powers set forth in this act, all powers, rights and privileges possessed by irrigation districts as set out in Chapter 2 of Part 6 of Division 11 of the Water Code,[2] not inconsistent with the provisions of this act. (Stats.1957, c. 1234, p. 2527, § 6.)

1 43 U.S.C.A. § 373 et seq.
2 Water Code § 22175.

Library References

Waters and Water Courses ⇐222. C.J.S. Waters § 316.

§ 81–6.1. United States contract fund

Sec. 6.1. All money collected in pursuance of a contract with the United States shall be paid into the agency treasury to the credit of the agency and shall be held in a fund to be known as the "United States Contract Fund" to be used for payments due to the United States under the contract.

(Amended by Stats.1969, c. 358, p. 874, § 1, eff. July 3, 1969.)

§ 81–6.2 Cooperation with United States, state, municipalities, districts, etc.; contracts

Sec. 6.2. The agency may cooperate and act in conjunction and contract with the United States, State of California, any municipality, district, public or private corporation, or any person; in the purchase and sale of water, in the acquisition of water or a water supply, in the construction of any works for the controlling of flood or storm waters in the agency, or for the protection of property, watersheds, watercourses, highways and life, or for the purpose of conserving and transporting said waters for beneficial uses and purposes, including recreational uses and the generation of electric energy, and for the use, operation and management and ownership of such works. The agency also may make and perform any agreement with the United States, the State, any county, municipality, district, public or private corporation, or any person for the joint acquisition, disposition, operation or management of any property, works, water or water supply of a kind which might be acquired, disposed of, or operated by the agency.

Any irrigation district, California water district, public utility district, municipal utility district, soil conservation district, county water district, water conservation district, municipality, flood control district, and any other district or political subdivision of the State empowered by law to appropriate water and deliver water to users may:

(a) Cooperate, act in conjunction with and enter into contracts with the agency for all the purposes for which the agency is empowered to cooperate or act in conjunction and contract with such districts, municipalities, and political subdivisions.

(b) Carry out the terms of such contracts. (Stats.1957, c. 1234, p. 2528, § 6.2.)

Library References

Waters and Water Courses ⇐225½. C.J.S. Waters § 221.

Library References

Waters and Water Courses ⟸227. C.J.S. Waters § 320.

§ 81-7. Directors; compensation; appointment

Sec. 7. (a) The board of supervisors of the county shall be ex officio the board of directors of the agency until succeeded by an appointed board as provided for in this section. Each member of the board of supervisors shall serve as a member of said board of directors without additional compensation, except such member shall be allowed his actual, necessary and reasonable traveling expenses.

(b) On or before January 15, 1975, the board of supervisors of the county shall by resolution do both of the following:

(1) Appoint a board of five directors for the agency, each of whom shall be a voter from a different supervisorial district in the county.

(2) Fix the time and date upon which the newly appointed directors shall take office, which time and date shall not be later than twelve o'clock noon, February 1, 1975. After such time and date the board of supervisors shall cease to be ex officio the board of directors of the agency.

(Amended by Stats.1969, c. 358, p. 874, § 1.5, eff. July 3, 1969; Stats.1970, c. 56, p. 72, § 1; Stats.1974, c. 396, p. 980, § 2.)

Cross References

Public officers and employees, interest in contracts, see Government Code § 1090 et seq.

Library References

Officers ⟸110. C.J.S. Officers § 116.

§ 81-7.1. Directors; qualifications; tenure; vacancies

Sec. 7.1. Except for the directors first appointed pursuant to Section 7, the governing body of the agency shall be a board of five directors, each of whom shall be a voter of, and nominated and elected from, a supervisorial district of the county.

The directors first appointed from supervisorial districts 3, 4, and 5 shall hold office until their successors take office following their election at the agency election held in 1975, and the directors first appointed from supervisorial districts 1 and 2 shall hold office until their successors take office following their election at the next succeeding agency election, which shall be in 1977.

Excepting directors appointed, each director shall be elected at an agency election and shall serve a term of four years. The provisions of the Uniform District Election Law shall govern all agency elections for directors.

All vacancies occurring in the office of director, including the failure of a person elected to qualify, shall be filled within 30 days after the vacancy occurs by appointment by the remaining directors of a person who is eligible to be elected for the vacancy. If the remaining directors fail to fill any vacancy within such 30-day period, the vacancy shall be filled by appointment by the board of supervisors of a person who is eligible to be elected for the vacancy.

(Added by Stats.1974, c. 396, p. 981, § 3.)

Historical and Statutory Notes

1970 Legislation.

Former section 81-7.1 was repealed by Stats.1970, c. 447, p. 896, § 38.

§ 81-7.2. Directors; chairman; meetings; procedure

Sec. 7.2. Within 30 days after the directors first appointed pursuant to Section 7 take office, and thereafter within 30 days after those who are elected at the succeeding elections take office, the directors shall meet and organize as a board.

The board shall:

(a) Elect from its members a chairman, who shall preside at all meetings of the board, and in case of the chairman's absence or inability to act, the members present shall, by an order entered in their records, select one of their number to act as temporary chairman.

(b) Provide for the time and place of holding its regular meeting.

(c) Provide for the manner of calling special meetings. The board shall act only by ordinance, resolution or motion and the enacting clause of all ordinances passed by the board shall be:

"Be it ordained by the Board of Directors of the Placer County Water Agency as follows:"

All ordinances shall be signed by the chairman and attested by the secretary or clerk, and shall be adopted, recorded, and published in the same manner, except as herein otherwise expressly provided, as are ordinances of the county. A majority of the board shall constitute a quorum for the transaction of business, and no act of the board shall be valid and binding unless a majority of all members concur therein. The board may transact any business of the agency at its organization meeting.

The board shall establish rules for its proceedings, and all legislative sessions of the board shall be public.

(Added by Stats.1974, c. 396, p. 981, § 4.)

§ 81-7.3. Electrical energy; contracts for sale; expenditures; public hearings

Sec. 7.3. No contract for the sale of electrical energy shall be executed, nor shall any revenues received pursuant to any contract for the sale of electrical energy entered into after January 1, 1975, be spent, unless previously approved by the board of supervisors of the county. The board of supervisors may, in connection with any of the foregoing conduct public hearings. Such hearings shall be declared by a resolution specifying the purpose and the day, hour, and place where all interested persons may appear and be heard. Such resolution shall be published in the agency pursuant to Section 6063 of the Government Code in a newspaper of general circulation in the agency. The hearing may be adjourned from time to time at the discretion of the board of supervisors, and at its conclusion the board of supervisors shall declare its decision.

(Added by Stats.1974, c. 396, p. 982, § 5.)

§ 81-7.4. Directors; compensation; expenses

Sec. 7.4. Each member of the board of directors shall be entitled to receive from the agency such compensation for performing the duties of director as may be fixed from time to time by the board; provided, that such compensation shall not exceed the maximum compensation permitted by law for directors of irrigation districts. In addition thereto, directors may be paid their actual and necessary expenses when acting under the orders of the board.

(Added by Stats.1974, c. 396, p. 982, § 6.)

§ 81-8. County officers and employees as officers and employees of agency; performance of duties

Sec. 8. All officers of the county, and their assistants, deputies, clerks and employees, shall be ex officio officers, assistants, deputies, clerks and employees respectively of the agency, and shall perform, unless otherwise provided by the board, the same duties for the agency as performed for the county; except that if the county surveyor is a registered civil engineer and is employed to supervise the engineering work of the agency, the board may provide compensation for his services in addition to his salary as county surveyor which shall be payable from the funds of the agency. (Stats.1957, c. 1234, p. 2720, § 8.)

§ 81-8.1. Employment of additional personnel

Sec. 8.1. The board may appoint and employ a secretary and such other officers, agents, superintendents, engineers, attorneys and employees for the board or agency as in its judgment may be deemed necessary, including, if it deems it advisable, a clerk, superintendent of work, treasurer, and auditor, and define their powers and duties, fix their compensation and fix the amount of bond required of each such employee or officer and pay the premium of each such bond. Such officers, agents and employees so appointed shall hold their respective offices and positions during the pleasure of the board. The board shall have the power to combine any two or more offices in its discretion.

(Amended by Stats.1969, c. 358, p. 874, § 2, eff. July 3, 1969; Stats.1974, c. 630, p. 1479, § 1.)

§ 81-9. Ordinances, resolutions and other legislative acts; initiative and referendum

Sec. 9. All ordinances, resolutions and other legislative acts of the agency shall be adopted by the board, and certified to, recorded and published in the same manner, except as herein otherwise expressly provided, as are ordinances, resolutions or other legislative acts of the county.

The initiative and referendum powers are hereby granted to the electors of the agency to be exercised in relation to the enactment or rejection of agency ordinances in accordance with the procedure established by the laws of this State for the exercise of such powers in relation to counties. (Stats.1957, c. 1234, p. 2530, § 9.)

Cross References

County ordinances, see Government Code § 25120 et seq.
Initiative and referendum, see Elections Code § 3700 et seq.

Library References

Administrative Law and Procedure ⇐121-124.

C.J.S. Public Administrative Bodies and Procedure § 19.

§ 81-10. Claims against agency

Sec. 10. Claims for money or damages against the agency are governed by Part 3 (commencing with Section 900) and Part 4 (commencing with Section 940) of Division 3.6 of Title 1 of the Government Code, except as provided therein. Claims not governed thereby or by other statutes or by ordinances or regulations authorized by law and expressly applicable to such claims shall be prepared and presented to the governing body, and all claims shall be audited and paid in the same manner and with the same effect as are similar claims against the county. (Stats.1957, c. 1234, p. 2530, § 10, as amended Stats.1959, c. 815, p. 2825, § 13; Stats.1964, 1st Ex. Sess., c. 123, p. 387, § 1, urgency, eff. May 28, 1964.)

Historical Note

Section 2 of Stats.1964, 1st Ex.Sess., c. 123, p. 388, provided:

"(a) This act applies to all causes of action heretofore or hereafter accruing.

"(b) Nothing in this act revives or reinstates any cause of action that, on the effective date of this act, is barred either by failure to comply with any applicable statute, charter or ordinance requiring the presentation of a claim or by failure to commence an action thereon within the period prescribed by an applicable statute of limitations.

"(c) Subject to subdivision (b), where a cause of action accrued prior to the effective date of this act and a claim thereon has not been presented prior to the effective date of this act, a claim shall be presented in compliance with this act, and for the purposes of this act such cause of action shall be deemed to have accrued on the effective date of this act.

"(d) Subject to subdivision (b), where a cause of action accrued prior to the effective date of this act and a claim thereon was presented prior to the effective date of this act, the provisions of this act so far as applicable shall apply to such claim; and, if such claim has not been acted upon by the board prior to the effective date of this act, such claim shall be deemed to have been presented on the effective date of this act."

Cross References

Claims against counties, see Government Code § 29700 et seq.

Library References

Claims, actions and judgments against public entities and public employees; recommendation. Cal.Law Revision Comm.(1963) Vol. 4, p. 1007 et seq.

§ 81-11. Property

Sec. 11. The legal title to all property acquired under the provisions of this act shall be in the agency and shall be held for the uses and purposes of this act. The board may hold, use, acquire, manage, occupy and possess such property and, after declaring by resolution entered in the minutes that any real or personal property held by the agency is no longer necessary, may sell or otherwise dispose of such property, or lease the same, in the manner provided by law for the disposition and sale of property by counties. (Stats.1957, c. 1234, p. 2530, § 11.)

Cross References

Sale of county property, see Government Code §§ 23004, 25334 et seq.

Library References

Waters and Water Courses ⇐225½. C.J.S. Waters § 321.

§ 81-12. Contracts; bids; performance bonds; emergency work; work by force account; materials and supplies * (see footnote below)

§ 81-12. Repealed by Stats.1984, c. 1128, § 141

Historical and Statutory Notes

Prior to repeal, § 81-12 was amended by Stats.1969, c. 358, p. 875, § 3.

Sec. now, Pub. Con. C. § 21321.

§ 81-13. Debt limit

Sec. 13. The agency shall not incur any indebtedness or liability exceeding in any year the income and revenue provided for such year, and any indebtedness or liability incurred in violation of this section shall be absolutely void and unenforceable. This section shall have no application to debts or liabilities incurred pursuant to the provisions of this act authorizing the issuance of revenue bonds pursuant to Section 16, the levying of special assessments, the execution of contracts with the United States and the state, nor the incurring of any indebtedness or liability authorized by a vote of the electors of any zone or improvement district of the agency at an election held for such purpose. (Amended by Stats.1971, c. 120, p. 164, § 1.5, eff. June 4, 1971.)

§ 81-13.1 Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed section, derived from Stats.1957, c. 1234, p. 2531, § 13.1, related to bonded debt limit.

Cross References

Local spending and taxing limits, see Const. art. 11, § 20.

§ 81-14. Taxation

Sec. 14. The agency may levy taxes to accomplish the purposes of this act, but only to the extent specifically authorized by this act. (Stats.1957, c. 1234, p. 2531, § 14, as amended Stats.1959, c. 815, p. 2820, § 15.)

Library References

Waters and Water Courses ⇐221. C.J.S. Waters § 323.

Former §81-12 has been replaced by Pub. Contract Code § 21321. Text of Art. 97 of Pub. Contract Code containing § 21321 is attached at the end of PCWA Act.

§ 81-14.1 Ad valorem tax; purposes; limitation

Sec. 14.1. If from any cause, the revenues of the agency shall be, or in the judgment of the board are likely to be, inadequate for any lawful purpose of the agency, the board shall have the power in any year to levy an ad valorem tax upon all taxable property in the agency for such purposes, except that the aggregate taxes or assessments levied for any one fiscal year shall not exceed ten cents ($0.10) on each one hundred dollars ($100) of the assessed valuation of the taxable property in the agency exclusive of any tax levied in any zone or participating zone pursuant to Section 15.

Such taxes shall be levied and collected with and not separately from taxes for county purposes, and the revenue derived from said agency taxes shall be paid into the county treasury to the credit of the agency, and the board shall have the power to control and order the expenditure thereof for said lawful purposes of the agency. (Stats.1957, c. 1234, p. 2531, § 14.1, as amended Stats.1959, c. 815, p. 2826, § 16.)

Cross References

Collection of county taxes, see Revenue and Taxation Code § 2501 et seq.
Levy of county taxes, see Government Code § 29100 et seq.; Revenue and Taxation Code § 2151 et seq.

§ 81-14.2 Taxation; law applicable

Sec. 14.2. The provisions of law of this State, prescribing the priority, time, and manner of levying, assessing, equalizing and collecting county property taxes, including the sale of property for delinquency, and the redemption from such sale, and the duties of the several county officers with respect thereto, are hereby adopted for the agency and made a part hereof, so far as they are applicable and not in conflict with this act. Such officers shall be liable upon their official bond for the faithful discharge of the duties imposed upon them by this act. (Formerly § 81-14.3, Stats.1957, c. 1234, p. 2532, § 14.3. Renumbered § 81-14.2, and amended Stats.1959, c. 815, p. 2826, § 17.)

Historical Note

Former section 81-14.2, derived from Stats.1957, c. 1234, p. 2532, § 14.2, relating to levy of special ad valorem tax, was repealed by Stats.1959, c. 815, p. 2834, § 29.

Cross References

County property taxes,
Assessment, see Revenue and Taxation Code § 201 et seq.
Collection, see Revenue and Taxation Code § 2501 et seq.
Equalization, see Revenue and Taxation Code § 1601 et seq.
Levy, see Government Code § 29100 et seq.; Revenue and Taxation Code § 2151 et seq.
Redemption, see Revenue and Taxation Code § 4101 et seq.
Sale of property for delinquency, see Revenue and Taxation Code § 3351 et seq.

§ 81-14.3 Renumbered § 81-14.2 and amended. Stats.1959, c. 815, p. 2826, § 17

§ 81-14.3. Collection of taxes; net amount paid to agency

Sec. 14.3. The taxes levied pursuant to Section 14.1 shall be collected at the time and in the manner of county taxes and paid into the county treasury. The net amount of the taxes, after deduction of the county's compensation for the services of its treasurer, assessor and tax collector, shall be paid to the agency treasurer by warrant of the county auditor.

(Added by Stats.1969, c. 358, p. 876, § 4, eff. July 8, 1969.)

§ 81-14.4. Revolving fund; creation; bond; expenditures and reimbursement

Sec. 14.4. (a) The board may establish a revolving fund for the use of any officer or employee of the agency by adopting a resolution setting forth the necessity for the fund, the officer or employee for which the fund is available, and the amount of the fund. Certified copies of the resolution shall be transmitted to the agency auditor and agency treasurer.

(b) Before any money is withdrawn from the agency treasury to be placed in the revolving fund, the officer or employee for whose use the fund is created shall file with the secretary of the board a bond executed by himself as principal and by an admitted surety insurer, in an amount equal to that of the revolving fund. The bond shall be conditioned upon the faithful administration of the fund and upon the willingness and ability of the principal to account for and pay over the fund upon demand of the board at any time.

(c) Upon the filing of the required bond the agency auditor shall draw his warrant in favor of the officer or employee for whose benefit the revolving fund is created, and the agency treasurer shall pay the warrant.

(d) The officer or employee may be authorized to use the fund for making change when necessary in carrying on his official work.

(e) The officer or employee shall not be authorized to expend any portion of the revolving fund except for services or material which are a legal charge against the agency.

(f) Any expenditure in excess of one dollar ($1) shall not be made unless a receipt is obtained which sets forth the date, the purpose of the expenditure, and the amount expended.

(g) Demand shall be made upon the agency for reimbursement of the fund in the same manner that other demands are made and shall be supported by receipts. All sums received in satisfaction of the demand shall be returned to the revolving fund.

(h) Upon demand of the agency auditor or board, the officer or employee entrusted with the fund shall give an account of the fund.

(i) The board may at any time increase, reduce, or discontinue any revolving fund established by its order. If the revolving fund is ordered reduced, the officer or employee using it shall immediately return to the agency treasurer the amount necessary to reduce the fund as ordered by the board. If the fund is discontinued the officer or employee shall immediately refund it to the agency treasurer. A reasonable time shall be allowed the officer or employee to reimburse himself by demand on the agency for expenditures legally made from the fund.

(Added by Stats.1969, c. 358, p. 876, § 5, eff. July 3, 1969.)

§ 81-15. Establishment of zones; institution of projects; taxation; bonds

Sec. 15. **(a) Establishment of zones.** The board by resolution shall establish such zones within the agency as in the judgment of said board are necessary to equitably apportion the benefits of the agency to the lands within the respective zones. Such zones may be established within the agency without reference to the boundaries of other zones, by setting forth the descriptions thereof by metes and bounds and by entitling each of such zones by a zone number. The lands comprising a zone need not be contiguous. All zones shall be established only with respect to projects for the benefit of such zones and proceedings for the establishment of such zones may be conducted concurrently with and as a part of proceedings for the instituting of projects relating to such zones, which proceedings shall be instituted in the manner prescribed in this section.

(b) Institution of projects; resolution; notice; hearing. The board may institute projects for the financing, acquisition, constructing, maintaining, operating, extending, repairing or otherwise improving any work of benefit to single zones or two or more zones. In cases of projects for the benefit of two or more zones, such zones shall become, and shall be referred to as, participating zones. For the purpose of acquiring authority to proceed with any such project, the board shall adopt a resolution specifying its intention to undertake such project, together with the engineering estimates of the cost of same to be borne by the particular zone or participating zones and fixing a time and place for public hearing of said resolution. The resolution shall refer to a map or maps showing the general location and general construction of said project. Notice of such hearing shall be given by publication pursuant to Section 6066 of the Government Code in a newspaper of general circulation designated by the board, circulated in such zone or each of said participating zones, if there be such newspaper, and if there be no such newspaper then by posting notice for two consecutive weeks prior to said hearing in two public places designated by the board, in such zone or in each of said participating zones. Publication shall be completed at least seven days before the date of the hearing. Said notice must designate a public place in such zone or in each of said participating zones where a copy or copies of the resolution and the map or maps of the proposed project may be seen by any interested person; said resolution and map or maps must be posted in each of said public places so designated in said notice at least two weeks prior to said hearing.

(c) **Objections; protests.** At the time and place fixed for the hearing, or at any time to which said hearing may be continued, the board shall consider all written and oral objections to the proposed project. Upon the conclusion of the hearing the board may abandon the proposed project or proceed with the same, or a portion thereof, unless prior to the conclusion of said hearing written protests have been filed against the proposed project signed by owners of real property within the zone or participating zone the assessed value of which, as shown by the last equalized assessment roll, constitutes more than one-half of the total assessed value of the real property of such zone, in which event further proceedings relating to such project must be suspended for not less than six months following the date of the conclusion of said hearing, or said proceeding may be abandoned at the discretion of the board.

(d) **Levy and collection of taxes. The board shall have power, in any year:**

(1) To levy taxes upon all taxable property in each or any of said zones according to benefits derived or to be derived therein to pay the cost and expenses of carrying out any of the objects or purposes of this act of benefit to such zones, including the administering, acquiring, constructing, maintaining, operating, extending, repairing, or otherwise improving any or all works of improvement established or to be established within or on behalf of said respective zones. Said taxes shall be based upon the assessment rolls used by the county for general tax purposes and shall not exceed fifty cents ($0.50) on each one hundred dollars ($100) of assessed valuation, exclusive of any tax levied pursuant to subdivision (f), hereof.

(2) Said taxes shall be levied and collected together with, and not separately from taxes for county purposes, and the revenues derived from said agency taxes shall be paid into the county treasury to the credit of the agency and the respective zones thereof, and the board shall have the power to control and order the expenditure thereof; provided, however, that no revenues, or portions thereof, derived in any of the several zones from the taxes levied under the provisions of this section shall be expended for acquiring, constructing, maintaining, operating, extending, repairing or otherwise improving any works located in any other zone, except in the case of projects for the benefit of participating zones or for projects authorized or established outside such zone or zones, but for the benefit thereof.

(e) **Bonded indebtedness; resolution declaring amounts necessary.** Whenever the board determines that a bonded indebtedness should be incurred by pay the cost of any work in any zone or participating zones, the board may by resolution determine and declare the respective amounts of bonds necessary to be issued in each zone in order to raise the amount of money necessary for each work and the maximum rate of interest of said bonds. The board shall cause a copy of the resolution, duty certified by the clerk, to be filed for record in the office of the Recorder of Placer County within five (5) days after its adoption. From and after said filing of said copy of said resolution the board shall be deemed vested with the authority to proceed with the bond election.

(f) **Special bond election; submission of question.** After the filing for record of the resolution specified in subdivision (e) of this section, the board may call a special bond election in said zone or participating zones at which shall be submitted to the qualified electors of said zone or participating zones the question whether or not bonds shall be issued in the amount or amounts determined in said resolution and for the purpose or purposes therein stated. Said bonds and the interest thereon shall be paid from revenue derived from annual taxes levied upon the lands situated within the zone or participating zones, and all such lands shall be and remain liable to be taxed for such payments as provided in this act.

(g) **Resolution calling bond election.** The board shall call such special bond election by resolution and submit to the qualified electors of said zone or participating zones the proposition of incurring a bonded debt in said zone or participating zones in the amount and for the purposes stated in the resolution referred to in subdivision (e) of this section. The resolution calling the bond election shall recite the objects and purposes for which the indebtedness is proposed to be incurred; provided, that it shall be sufficient to give a brief, general description of such objects and purposes, and refer to the recorded copy of the resolution referred to in subdivision (e) of this section. The resolution calling such special bond election shall also state the estimated cost of the proposed work, the amount of the principal of the indebtedness to be incurred and the maximum rate of interest to be paid on said indebtedness. Said resolution shall also fix the date on which such special election shall be held and the form and contents of the ballot to be used. The rate of interest to be paid on such indebtedness shall not exceed six percent (6%) per annum. For the purposes of said election said board shall in said resolution calling said bond election establish a special bond election precinct or precincts within the boundaries of each zone and participating zones and may form election precincts by consolidating the precincts established for general elections in the agency to a number not exceeding six general precincts for each such special bond election precinct. Said resolution shall also designate polling places and appoint at least one inspector, one judge and one clerk for each of such special bond election precincts.

(h) Applicability of general election laws. In all particulars not recited in said resolution calling said bond election, such special bond election shall be held as nearly as practicable in conformity with the general election laws of the state.

(i) Preparation of map; posting. The board shall cause a map to be prepared covering a general description of the work to be done, which said map shall show the location of the proposed work and shall cause the said map to be posted in a prominent place in the county courthouse for public inspection for at least thirty (30) days before the date fixed for such election.

(j) Publication or posting of resolution calling bond election. Said resolution calling for such special bond election shall, prior to the date set for such election, be published in a newspaper of general circulation circulated in each zone and participating zone affected for six consecutive times if published in a daily newspaper of general circulation, or two times if published in a weekly newspaper of general circulation. The last publication of such resolution must be at least fourteen (14) days before said election, and if there be no such newspaper, then such resolution shall be posted in two public places designated by the board, in each zone and participating zone for at least thirty (30) days before the date fixed for such election. No other notice of such election need be given nor need polling place cards be issued.

(k) Validity of bonds; defects or irregularities. Any defect or irregularity in the proceedings prior to the calling of such special bond election shall not affect the validity of the bonds authorized by said election. If at such election two-thirds of the votes cast in the zone or in each of the participating zones are in favor of incurring such bonded indebtedness, then bonds for such zone or participating zones for the amount stated in such proceedings may be issued and sold as in this act provided.

(*l*) Form of bonds. The board shall, subject to the provisions of this act, prescribe by resolution the form of said bonds, which must include a designation of the zone or participating zones affected, and of the interest coupons attached thereto. Said bonds shall be payable annually or semiannually, at the discretion of the board, each and every year on a day and date and at a place to be fixed by said board and designated in such bonds, together with the interest on all sums unpaid on such date until the whole of said indebtedness shall have been paid.

(m) Series bonds; maturity. The board may divide the principal amount of any issue into two or more series and fix different dates for the bonds of each series. The bonds of one series may be made payable at different dates from those of any other series. The maturity dates of each series shall comply with this section. The board may fix a date not more than two (2) years from the date of issuance for the earliest maturity of each issue or series of bonds. The final maturity date of each issue or series shall not exceed forty (40) years from the time of incurring the indebtedness evidenced by such issue or series.

(n) Denomination of bonds; interest; coupons; signatures. The bonds shall be issued in such denomination as the board may determine, and shall be payable on the days and at the place fixed in said bonds, and with interest at the rate specified in such bonds, which rate shall not be in excess of six percent (6%) per annum, and shall be made payable annually or semiannually, and the bonds of each issue or series shall be numbered consecutively and shall be signed by the chairman of the board, and countersigned by the auditor of the agency, and the seal of the agency shall be affixed thereto by the clerk of the board. One of such signatures may be printed, engraved or lithographed. The interest coupons of said bonds shall be numbered consecutively and signed by the said auditor by his printed, engraved or lithographed signature. In case any such officers whose signatures or countersignatures appear on the bonds or coupons shall cease to be such officers before the delivery of such bonds to the purchaser, such bonds and coupons, and signatures or countersignatures shall nevertheless be valid and sufficient for all purposes the same as if such officers had remained in office until the delivery of the bonds.

(o) Notice inviting bids; publication. Before selling the bonds, or any part thereof, the board shall give notice not less than 10 days prior to the date of sale by publication in a newspaper of general circulation circulating in the agency inviting sealed bids in such manner as the board shall prescribe. If satisfactory bids are received, the bonds offered for sale shall be awarded to the highest responsible bidder. If no bids are received, or if the board determines that the bids received are not satisfactory as to price or responsibility of the bidders, the board may reject all bids received, if any, and either readvertise or sell the bonds at private sale.

(p) Payment of bonds; annual tax; liability of zones. Any bonds issued under the provisions of this section, and the interest thereon, shall be paid by revenues derived from an annual tax upon all taxable property in the zone or participating zones sufficient to pay the interest and such portion of the principal of said bonds as is due or to become due before the time for making the next general tax levy. No zone nor the property therein shall be liable for the share of bonded indebtedness of any other zone, nor shall any moneys derived from taxation in any of the several zones be used in payment of principal or interest or otherwise of the share of the bonded indebtedness chargeable to any other zone. Such taxes shall be levied and collected in the respective zones or participating zones, together with and not separately from taxes for county purposes, and the revenues derived from said taxes shall be paid into the county treasury of said Placer County to the credit of the zone of payment, and thereafter paid to the agency treasurer pursuant to Section 14.3 and be used for the payment of the principal and interest on said bonds, and for no other purpose. It is hereby declared that for the purposes of any tax levied pursuant to this subdivision (p), the property so taxed within a given zone is equally benefited.

(Amended by Stats.1969, c. 358, p. 877, § 6, eff. July 3, 1969.)

§§ 81-15.1 to 81-15.4. Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed sections, derived from Stats. 1957, c. 1234, pp. 2533-2535, §§ 15.1-15.4, related to bonds. See, now, § 81—15.

§ 81-15.1. Annexation to or detachment of territory from zone

Sec. 15.1. (a) Territory may be annexed to a zone or territory within an existing zone may be detached therefrom under the procedure set forth in this section.

(b) Whenever any territory is annexed to a zone, the annexed territory shall be subject to all the liabilities and entitled to all the benefits of that zone.

(c) Whenever any territory is detached from a zone, except as otherwise provided for herein, the territory detached, all inhabitants within such territory and all persons formerly entitled to vote by reason of residing within such zone shall cease to be subject to the jurisdiction of such zone and shall have none of the rights or duties of the remaining territory or voters of such zone upon and after the effective date of the detachment.

No inhabitant, property owner, taxpayer, consumer, or user within territory detached from a zone shall be entitled (i) to all or any part or to any payment on account of the moneys or funds (including cash on hand and moneys due but uncollected) or any property, real or personal, of such zone or (ii) to any refund by reason of any taxes, assessments, service charges, rentals or rates collected prior to the effective date of the detachment.

Territory detached from a zone shall continue to be liable for the payment of principal, interest and any other amounts which shall become due on account of any bonds, including revenue bonds, or other contracts or obligations of the zone within which the detached territory shall have been situated, as shall be outstanding on the effective date of detachment and shall be subject to the levying or fixing and collection of any (i) taxes or assessments, or (ii) service charges, rentals or rates, or (iii) both, as may be necessary to provide for such payment.

(d) The board shall adopt a resolution initiating proceedings for annexation or detachment, which resolution shall contain all the following:

(1) The exterior boundaries of the territory proposed for annexation or detachment.

(2) A statement of the reasons for the proposed annexation or detachment.

(3) Fix a time, date, and place of hearing on the proposed annexation or detachment.

(4) State that any interested person desiring to make written protest against such annexation or detachment shall do so by written communication, containing the signature and street address of the protestant, filed with the clerk of the agency not later than the hour set for the hearing.

(e) The clerk of the agency shall give notice of the hearing by mailing a copy of such notice to all landowners owning land within the territory proposed to be annexed or detached, and by publishing notice thereof in at least two successive issues, not more than 30 nor less than 10 days prior to the hearing, in a newspaper of general circulation published in the agency.

(f) A majority protest shall be deemed to exist, and the proposed annexation or detachment shall be abandoned, if the agency shall find that written protests filed and not withdrawn prior to the conclusion of the hearing represent more than 50 percent of the assessed value of the land and improvements within the territory proposed to be annexed or detached.

(g) At the hearing, all interested persons shall be given the opportunity to present evidence and testimony for or against the proposed annexation or detachment. Any person who shall have filed a written protest may withdraw the written protest at any time prior to the conclusion of the hearing.

If a majority protest shall not have been filed, the board, not later than 30 days after the conclusion of the hearing, shall adopt a resolution making one of the following determinations:

(1) Disapproving the proposed annexation or detachment.

(2) Approving the proposed annexation or detachment.

(3) Approving the annexation or detachment, but excluding any lands which the board finds will not be benefited by such annexation or detachment.

(h) If the board approves the proposed annexation or detachment, or approves it but excludes any lands, a certified copy of the resolution of the board, together with a map or plat of the new boundaries of the zone, shall be filed with the agencies designated in, and as required by, Sections 54900, 54901, and 54902 of the Government Code. Upon such filing, the annexation or detachment of the territory to the zone shall be effective.

(Added by Stats.1974, c. 630, p. 1479, § 2.)

Library References

Municipal Corporations ⇐27 et seq.
C.J.S. Municipal Corporations § 41.

§ 81-15.2. Zone advisory council

Sec. 15.2. The board may by resolution create an advisory council for any zone to assist and advise the board on all matters pertaining to that zone. Each such council shall consist of not more than five members appointed by and serving at the pleasure of the board. Each council member shall be either a resident of or the owner of property in the zone for which the council is appointed. Council members shall receive such sum as is fixed by the board, up to a maximum of twenty-five dollars ($25), for each meeting of the council attended by the member, not exceeding two meetings per month, plus actual, necessary and reasonable traveling expenses. The compensation set for the various advisory councils need not be the same, but in no event may it exceed the maximum provided for in this section.

(Added by Stats.1974, c. 630, p. 1480, § 3.)

§ 81-15.5. Formation of improvement districts; powers and duties of board

Sec. 15.5. Improvement districts may be formed in the agency for any authorized purpose of the agency in the same manner as improvement districts are formed in irrigation districts. When formed, such improvement districts shall be governed in the same manner as improvement districts in irrigation districts. The board shall have the same rights, powers, duties and responsibilities with respect to the formation and government of improvement districts in the agency as the board of directors of an irrigation district has with respect to improvement districts in irrigation districts. Assessments in an improvement district in the agency shall be levied, collected and enforced at the same time and as nearly in the same manner as practicable as annual taxes of the county, except that the assessment shall be made in the same manner as provided with respect to improvement districts in irrigation districts.

(Added by Stats.1971, c. 120, p. 164, § 2, eff. June 4, 1971.)

Library References

Waters and Water Courses ⇐183½.
C.J.S. Waters § 243.

§ 81–15.6. Works or improvements under Improvement Act of 1911 or Municipal Improvement Act of 1913

Sec. 15.6. Whenever in the opinion of the board the public interest or convenience may require, it may order any work or improvement which it is authorized to undertake to be done in accordance with the procedure and in pursuance of the provisions of either the Improvement Act of 1911, Division 7 (commencing at Section 5000) of the Streets and Highways Code, or the Municipal Improvement Act of 1913, Division 12 (commencing at Section 10000) of the Streets and Highways Code.

The following terms, as used in such improvement acts have the following meaning:

(a) "Municipality" or "city" means the agency;

(b) "City council" or "legislative body" means the board of directors of the agency;

(c) "City treasurer" or "treasurer" means the officer of the agency who has charge of and makes payment of the agency funds;

(d) "Mayor" means the chairman of the agency;

(e) "Clerk" means the secretary of the agency;

(f) "Council chambers" means the place where the regular meetings of the board of directors are held;

(g) "Superintendent of streets," or "street superintendent" and "city engineer" mean the general manager of the agency, or any other person appointed to perform such duties;

(h) "Tax collector" means the county tax collector;

(i) "Right-of-way" means any parcel of land through which a right-of-way has been granted to the agency for any purpose;

(j) All other words and terms relating to municipal officers and matters refer to the corresponding officers of the agency and matters under this act.

(Added by Stats.1971, c. 120, p. 165, § 3, eff. June 4, 1971.)

Library References

Waters and Water Courses ⇐183½.
C.J.S. Waters § 243.
Words and Phrases (Perm.Ed.)

§ 81–16. Revenue bonds

Sec. 16. If the board by resolution determines that a bonded indebtedness to pay the acquisition or construction of any works for any purposes of the agency or for refunding any outstanding bonds should be incurred and can be repaid and liquidated as to both principal and interest from revenues designated by the board, the agency is authorized and shall have the power to define such works as an "enterprise" and to issue revenue bonds, all in the manner and as provided in the Revenue Bond Law of 1941; provided, however, that, notwithstanding the provisions of Government Code Section 54310, the board shall have the power, subject to the limitations of Section 4.1 hereof, to borrow money and issue revenue bonds for, and to define "enterprise" to include, systems, plants, works or undertakings for the generation, production, transmission and sale of hydroelectric energy; and provided, further, that notwithstanding the provisions of Section 54400 of the Government Code, the board may determine and provide, in any resolution for the issuance of revenue bonds, for maturity dates of the revenue bonds not exceeding 50 years from their date of issuance.

If the interest and principal of the revenue bonds and all charges to protect or secure them have been paid when due, an amount for the necessary and reasonable maintenance and operation costs of the enterprise, which costs include the reasonable expenses of management, repaid and other expenses necessary to maintain and preserve the enterprise in good repair and working order, may be apportioned from the revenues, and subject to any limiting covenants in the resolution providing for the issuance of bonds, the remaining surplus may be used for any lawful purpose of the agency, which, without limiting the generality of the foregoing, shall include the right and authority to expend any or all of such surplus as contributions in aid of necessary extensions of water storage and distribution facilities of the agency, payments in lieu of taxes to any or all political subdivisions, including but not limited to school districts, upon works of the agency situate within such political subdivisions in the County of Placer, and the purchase or obtaining of additional water supplies. (Stats.1957, c. 1234, p. 2535, § 16, as amended Stats.1959, c. 815, p. 2831, § 19; Stats.1961, c. 301, p. 1336, § 1, effective May 8, 1961; Stats.1967, c. 117,

§ 81-17. Legal investments

Sec. 17. All revenue bonds issued by the agency may be certified as legal investments, pursuant to the District Securities Law, Division 10 (commencing with Section 20000) of the Water Code, in the manner and to the extent provided in Sections 54433 and 54434 of the Government Code.

(Amended by Stats.1971, c. 214, p. 324, § 196.)

§ 81-18. Action to test validity of bonds, tax levy or contract

Sec. 18. An action to determine the validity of bonds, levy of a special assessment or a contract may be brought pursuant to Chapter 9 (commencing with Section 860) of Title 10 of Part 2 of the Code of Civil Procedure. In any such action all findings of fact or conclusions of the board upon all matters shall be conclusive unless the action was instituted within six months after the finding or conclusion was made. (Formerly § 81-30, Stats.1957, c. 1234, p. 2542, § 30. Renumbered § 81-18, and amended Stats.1959, c. 815, p. 2832, § 21, as amended Stats.1961, c. 1040, p. 2724, § 1.)

Historical Note

Former section 81—18, derived from Stats.1957, c. 1234, p. 2536, § 18, relating to revenue bonds, was repealed by Stats. 1959, c. 815, p. 2834, § 29.

§ 81-19. Effect upon districts within limits of agency

Sec. 19. Neither the establishment of the agency nor any provision of this act shall affect, restrict nor supersede the existence, property, right, or power of any district, now or hereafter established in or partially within the limits of the agency for the purpose of flood control, reclamation, conservation, storage, distribution, sale, use, or development of water. The Legislature, because of conditions special to the county, hereby expressly declares its intent to permit within the limits of the Placer County Water Agency, the existence of more than one district, having similar powers over similar territory in regard to flood control, reclamation and water conservation, storage, distribution, sale, use or development. (Formerly § 81-32, Stats.1957, c. 1234, p. 2543, § 32. Renumbered § 81-19, and amended Stats.1959, c. 815, p. 2832, § 22.)

Historical Note

Former section 81—19, derived from Stats.1957, c. 1234, p. 2536, § 19, relating to revenue bonds, was repealed by Stats.1959, c. 815, p. 2834, § 29.

§§ 81-19.1 to 81-19.21 Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed sections, derived from Stats. 1957, c. 1234, pp. 2536-2539, §§ 19.1-19.21, related to indenture agreements, designation of trustees and series bonds.

§ 81-20. Vested rights

Sec. 20. Neither the formation of the agency nor this act shall impair the vested right of any person, association, corporation or district in or to any water or the use thereof. (Formerly § 81-33, Stats.1957, c. 1234, p. 2543, § 33. Renumbered § 81-20, and amended, Stats.1959, c. 815, p. 2833, § 23.)

Historical Note

Former section 81—20, derived from Stats.1957, c. 1234, p. 2539, § 20, relating to coupon bonds and registered bonds, was repealed by Stats.1959, c. 815, p. 2834, § 29.

§§ 81-20.1 to 81-20.8 Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed sections, derived from Stats.1957, c. 1234, pp. 2539, 2540, §§ 20.1-20.8, related to bonds. See, now, § 81—15.

§ 81-21. Action to test validity of existence of agency

Sec. 21. The agency, in order to determine the legality of its existence, may institute a proceeding therefor in the Superior Court of this State, in and for the County of Placer, by filing with the clerk of said county a complaint setting forth the name of the agency, its exterior boundaries, the date of its organization and a prayer that it be adjudged a legal agency formed under this act. The summons in such proceeding shall be served by publishing a copy thereof once a week for four weeks in a newspaper of general circulation published in the county. The State of California shall be a defendant in such action, and consent therefor is given. Service of summons therein shall be made on the Attorney General. The Attorney General shall appear in such action on behalf of the State in the same manner as with appearances in civil actions. Within thirty (30) days after proof of publication of said summons the State, any property owner or resident in said agency, or any person interested may appear as a defendant in said action by serving and filing an answer to said complaint, in which case said answer shall set forth the facts relied upon to show the invalidity of the agency and shall be served upon the district attorney before being filed in such proceeding. Such proceeding is hereby declared to be a proceeding in rem and the final judgment rendered therein shall be conclusive against all persons whomsoever, including the agency and the State of California. (Formerly § 81-34, Stats.1957, c. 1234, p. 2543, § 34. Renumbered § 81-21, and amended Stats.1959, c. 815, p. 2833, § 24.)

Historical Note

Former section 81—21, derived from Stats.1957, c. 1234, p. 2540, § 21, relating to tax exemption of bonds, was repealed by Stats.1959, c. 815, p. 2834, § 29.

Cross References

Publication in newspapers, see Government Code § 6000 et seq.
Summons, service by publication, see Code of Civil Procedure, §§ 412, 413, 416.

§ 81-21.1 Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed section, derived from Stats.1957, c. 1234, p. 2540, § 21.1, related to bonds as legal investments.

§ 81-22. Dissolution

Sec. 22. The agency may be dissolved in the manner provided for the dissolution of districts by Chapter 4, commencing at Section 58950, of Division 1 of Title 6 of the Government Code, and the agency shall be considered a district within the meaning of all of the provisions of said chapter. (Formerly § 81-35, Stats.1957, c. 1234, p. 2544, § 35. Renumbered § 81-22, and amended Stats.1959, c. 815, p. 2833, § 25.)

Historical Note

Former section 81—22, derived from Stats.1957, c. 1234, p. 2541, § 22, relating to funding or refunding revenue bonds, was repealed by Stats.1959, c. 815, p. 2831, § 29.

§ 81-23. Legislative finding and declaration

Sec. 23. The Legislature hereby finds that water problems in the county require county-wide water conservation, flood control and development of water resources; that all land within the county will be benefited thereby; that the solution of these problems lies within and is peculiar to the area to be included in the agency; that these problems are not general or statewide; that the county for many years has made investigations and engineering surveys of the county's water resources by private, public and United States engineers; that county water districts, municipalities, and water conservation districts now exist within portions of the county, have acquired property and works, developed a limited water supply, and have incurred indebtedness, but have been and are unable alone to economically develop an adequate water supply and control the floods of said county and for such reason it is necessary to have a political entity coextensive with the geographical limits of the entire county; that the county cannot be supplied with water from a common source or by a common system of works; that investigation having shown conditions in said county to be peculiar to it. It is, therefore, hereby declared that a general law cannot be made applicable to said county and that the enactment of this special law is necessary for the conservation, development, control and use of said water for the public good and for the protection of life and property therein. (Formerly § 81-36, Stats.1957, c. 1234, p. 2544, § 36. Renumbered § 81-23, and amended Stats.1959, c. 815, p. 2833, § 26.)

Historical Note

Former section 81—23 derived from Stats. 1957, c. 1234, p. 2541, § 23, relating to funding or refunding revenue bonds, was repealed by Stats.1959, c. 815, p. 2834, § 29.

§ 81-24. Partial invalidity

Sec. 24. If any provision of this act is declared unconstitutional or invalid, for any reason, the remainder of the act shall not thereby be invalidated, but shall remain in full force and effect. (Formerly § 81-37, Stats.1957, c. 1234, p. 2544, § 37. Renumbered § 81-24, and amended Stats.1959, c. 815, p. 2834, § 27.)

Historical Note

Former section 81—24, derived from Stats. 1957, c. 1234, p. 2541, § 24 relating to negotiability of bonds, was repealed by Stats. 1959, c. 815, p. 2834, § 29.

§ 81-25. Short title

Sec. 25. This act may be designated and referred to as "the Placer County Water Agency Act," and any reference thereto by such designation shall be sufficient for all purposes. (Formerly § 81-38, Stats.1957, c. 1234, p. 2544, § 38. Renumbered § 81-25, and amended Stats.1959, c. 815, p. 2834, § 28.)

Historical Note

Former section 81—25, derived from Stats. 1957, c. 1234, p. 2541, § 25, relating to resolution of board declaring purpose for use of bond proceeds and maximum amount of bonds, was repealed by Stats.1959, c. 815, p. 2834, § 29.

§§ 81-26 to 81-29. Repealed. Stats.1959, c. 815, p. 2834, § 29

Historical Note

The repealed sections, derived from Stats. 1957, c. 1234, pp. 2541, 2542, §§ 26-29, related to insurance against loss of revenues; indenture agreement provisions relating to deposit and disbursement of funds; investment of moneys; surplus moneys; and actions to test validity of bonds.

§ 81-30. Renumbered § 81-18 and amended. Stats.1959, c. 815, p. 2832, § 21

§ 81-31. Blank

§ 81-32. Renumbered § 81-19 and amended. Stats.1959, c. 815, p. 2832, § 22

§ 81-33. Renumbered § 81-20 and amended. Stats.1959, c. 815, p. 2833, § 23

§ 81-34. Renumbered § 81-21 and amended. Stats.1959, c. 815, p. 2833, § 24

§ 81-35. Renumbered § 81-22 and amended. Stats.1959, c. 815, p. 2833, § 25

§ 81-36. Renumbered § 81-23 and amended. Stats.1959, c. 815, p. 2833, § 26

§ 81-37. Renumbered § 81-24 and amended. Stats.1959, c. 815, p. 2834, § 27

§ 81-38. Renumbered § 81-25 and amended. Stats.1959, c. 815, p. 2834, § 28

Division 2

GENERAL PROVISIONS

Part 1

ADMINISTRATIVE PROVISIONS

Chapter 1

DEFINITIONS

§ 1101. Public works contract

Code of Regulations References

Office of small business procurement and contracts, see 2 Cal. Code of Regs. § 1896 et seq.

Notes of Decisions

Reclaimed water use 1

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1. Reclaimed water use

Primary purpose of agreement for reclaimed water use was to dispose of sludge and reclaimed water in utilitarian fashion which, absent agreement, sanitation district would otherwise perform itself, and thus, agreement fell within definition of "public work contract." Boydston v. Napa Sanitation Dist. (App. 1 Dist.1990) 272 Cal.Rptr. 458, 222 Cal.App.3d 1362, rehearing denied 273 Cal.Rptr. 331, 222 Cal.App.3d 1362.

§ 1102. Emergency

"Emergency," as used in this code, means a sudden, unexpected occurrence that poses a clear and imminent danger, requiring immediate action to prevent or mitigate the loss or impairment of life, health, property, or essential public services.

(Added by Stats.1994, c. 803 (A.B.3348), § 1.)

PLACER COUNTY WATER AGENCY

21322. Contracts; advertisement exception; emergency work.

§ 21320. Application of article

Library References

Statutes ⇐191.
C.J.S. Statutes § 329.

§ 21321. Contracts; bids; performance bonds; emergency work; work by force account; materials and supplies

All contracts for any improvement or unit of work, when the cost according to the estimate of the engineer will exceed five thousand dollars ($5,000), shall be let to the lowest responsible bidder or bidders as provided in this article. The board shall first determine whether the contract shall be let as a single unit * * *, or divided into severable * * * parts. The board shall advertise for bids by three insertions in a daily newspaper of general circulation or by two insertions in a weekly newspaper * * * of general circulation printed and published in the * * * agency's jurisdiction, inviting sealed proposals for the construction or performance of the improvement or work. The call for bids shall state whether the work shall be performed in one unit or divided into parts. The work may be let under a single contract or several contracts, as stated in the call. The board shall require the successful bidders to file with the board good and sufficient bonds to be approved by the board conditioned upon the faithful performance of the contract and upon the payment of their claims for labor and material. The bonds shall comply with * * * Title 15 (commencing with Section 3082) of Part 4 of Division 3 of the Civil Code. The board may reject any * * * bid. In the event all proposals are rejected or no proposals are received, or the estimated cost of the work does not exceed five thousand dollars ($5,000), or the work consists of channel protection, maintenance * * *, or emergency work * * *, the board may have the work done by force account without advertising for bids. In case of an emergency, if notice for bids to let contracts will not be given, the board shall comply with Chapter 2.5 (commencing with Section 22050). In the event that no proposals are received, or if only one responsive proposal is received, the board may negotiate a contract for construction or performance of the work or improvement or substantially similar work or improvement; provided, that if only one responsive proposal is received * * *, the contract must be negotiated with the bidder. The agency may purchase in the open market without advertising for bids, materials and supplies for use in any work, either under contract or by force account. Sections 4300 to 4305, inclusive, of the Government Code [1] do not apply to the agency's Middle Fork American River Project. The provisions of this section apply to all proposals or contracts whether or not received or entered into prior to the effective date of the amendment of this provision made at the 1963 Regular Session of the Legislature.

(Amended by Stats.1994, c. 803 (A.B.3348), § 51.)

[1] Repealed; see, now, Civil Code §§ 3247, 3248.

Cross References

Emergency defined, see Public Contract Code § 1102.

Library References

Waters and Water Courses ⇐183½.
C.J.S. Waters § 243.

§ 21322. Contracts; advertisement exception; emergency work

Notwithstanding the provisions of Section 21321, contracts may be let for work without advertising in cases of significant emergency as determined by the board. Cases of significant emergency include, but are not limited to:

(1) States of emergency as specified in Section 8558 of the Government Code.

(2) When emergency repair or replacement is necessary to permit the continued operation or service of the agency.

(3) When the emergency work is necessary to avoid danger to life or property.

Any action taken under this section must be authorized by a unanimous vote of the board members present. Additionally, the board must find, based on substantial evidence set forth in the minutes of its meeting, that the emergency work is necessary for the stated reasons.

(Added by Stats.1993, c. 687 (A.B.1225), § 1, eff. Oct. 4, 1993.)

(b) On those projects set forth in subdivision (b) or (c) of Section 22042, the public agency shall present the commission's findings to its governing body and that governing body shall conduct a public hearing with regard to the commission's findings within 30 days of receipt of the findings.

(Formerly § 21214, added by Stats.1983, c. 1054, § 1. Renumbered § 22044 and amended by Stats.1986, c. 1019, § 66.)

Historical and Statutory Notes

1986 Legislation

Renumbering of this section as § 21914 and amendment by Stats.1986, c. 248, was subordinated to its renumbering and amendment by Stats.1986, c. 1019. See Historical Note under Bus. & Prof.C. § 5678.5.

§ 22045. Implementation of procedures review; commission recommendation

(a) No later than January 1, 1985, the commission shall recommend, for adoption by the Controller, written procedures implementing the accounting procedures review provided for in this article.

(b) The Controller shall, upon receipt of the commission's recommendation, review and evaluate the recommended procedures and either formally adopt or reject the recommended procedures within 90 days of submission of the commission.

(Formerly § 21215, added by Stats.1983, c. 1054, § 1. Renumbered § 22045 and amended by Stats.1986, c. 1019, § 67.)

Historical and Statutory Notes

1986 Legislation

Renumbering of this section as § 21915 and amendment by Stats.1986, c. 248, was subordinated to its renumbering and amendment by Stats.1986, c. 1019. See Historical Note under Bus. & Prof.C. § 5678.5.

Chapter 2.5

EMERGENCY CONTRACTING PROCEDURES

Chapter 2.5 was added by Stats.1994, c. 803 (A.B.3348), § 88.

§ 22050. Contracts without bids; procedures

(a)(1) In the case of an emergency, a public agency, pursuant to a four-fifths vote of the governing body, may repair or replace a public facility, take any directly related and immediate action required by that emergency, and procure the necessary equipment, services, and supplies for those purposes, without giving notice for bids to let contracts.

(2) Before a governing body takes any action pursuant to paragraph (1), it shall make a finding, based on substantial evidence set forth in the minutes of its meeting, that the emergency will not permit a delay resulting from a competitive solicitation for bids, and that the action is necessary to respond to the emergency.

(b)(1) The governing body, by a four-fifths vote, may delegate, by resolution or ordinance, to the appropriate county administrative officer, city manager, chief engineer, or other nonelected agency officer the authority to order any action pursuant to paragraph (1) of subdivision (a).

(2) If the public agency has no county administrative officer, city manager, chief engineer, or other nonelected agency officer, the governing body, by a four-fifths vote, may delegate to an elected officer the authority to order any action specified in paragraph (1) of subdivision (a).

(3) If a person with authority delegated pursuant to paragraph (1) or (2) of this section orders any action specified in paragraph (1) of subdivision (a), that person shall report to the governing body, at its next meeting required pursuant to this section, the reasons justifying why the emergency will not permit a delay resulting from a competitive solicitation for bids and why the action is necessary to respond to the emergency.

(c)(1) If the governing body orders any action specified in subdivision (a), the governing body shall review the emergency action at its next regularly scheduled meeting and, except as specified below, at every regularly scheduled meeting thereafter until the action is terminated, to determine, by a four-fifths vote, that there is a need to continue the action. If the governing body meets weekly, it may review the emergency action in accordance with this paragraph every 14 days.

(2) If a person with authority delegated pursuant to subdivision (b) orders any action specified in paragraph (1) of subdivision (a), the governing body shall initially review the emergency action not later than seven days after the action, or at its next regularly scheduled meeting if that meeting will occur not later than 14 days after the action, and at least at every regularly scheduled meeting thereafter until the action is terminated, to determine, by a four-fifths vote, that there is a need to continue the action, unless a person with authority delegated pursuant to subdivision (b) has terminated that action prior to the governing body reviewing the emergency action and making a determination pursuant to this subdivision. If the governing body meets weekly, it may, after the initial review, review the emergency action in accordance with this paragraph every 14 days.

(3) When the governing body reviews the emergency action pursuant to paragraph (1) or (2), it shall terminate the action at the earliest possible date that conditions warrant so that the remainder of the emergency action may be completed by giving notice for bids to let contracts.

(d) As used in this section, "public agency" has the same meaning as defined in Section 22002.

(e) A three-member governing body may take actions pursuant to subdivision (a), (b), or (c) by a two-thirds vote.

(f) This section applies only to emergency action taken pursuant to Sections 20133, 20168, 20193, 20205.1, 20134, 20168, 20205.1, 20213, 20223, 20233, 20253, 20273, 20283, 20293, 20313, 20331, 20567, 20586, 20604, 20635, 20645, 20685, 20736, 20751.1, 20806, 20812, 20914, 20918, 20926, 20931, 20941, 20961, 20991, 21020.2, 21024, 21031, 21043, 21061, 21072, 21081, 21091, 21101, 21111, 21121, 21131, 21141, 21151, 21161, 21171, 21181, 21191, 21196, 21203, 21212, 21221, 21231, 21241, 21251, 21261, 21271, 21290, 21311, 21321, 21331, 21341, 21351, 21361, 21371, 21381, 21391, 21401, 21411, 21421, 21431, 21441, 21451, 21461, 21472, 21482, 21491, 21501, 21511, 21521, 21531, 21541, 21552, 21567, 21572, 21581, 21591, 21601, 21618, 21624, 21631, 21641, and 22035.

(Added by Stats.1994, c. 803 (A.B.3348), § 88.)

Cross References

Emergency defined, see Public Contract Code § 1102.

Chapter 3

ACQUISITION OF ELECTRONIC DATA PROCESSING

§ 22102. District

Cross References

ver, or water and sewer services to the affected lands, and may restrict the assessment to one or more improvement districts or zones of benefit established within the jurisdiction of the agency. The charge may be imposed on an area, frontage, or parcel basis, or a combination thereof.

(Added by Stats.1988, c. 834, § 1.)

§ 54984.3. Resolution adopted by governing body; contents

The governing body of the local agency shall adopt a resolution to initiate proceedings to fix a standby charge. The resolution shall contain all of the following:

(a) A statement that the report of a qualified engineer is on file with the agency and that a standby charge is proposed based upon the report. The report shall include all of the following:

(1) A description of the charge and the method by which it will be imposed.

(2) A compilation of the amount of the charge proposed for each parcel subject to the charge.

(3) A statement of the methodology and rationale followed in determining the degree of benefit conferred by the service for which the charge is made.

(4) The other factors listed in Section 54984.2.

(b) A description of the lands upon which the charge is to be imposed. Assessor parcel numbers shall constitute sufficient description for this purpose.

(c) The amount of the charge for each of the lands so described.

(d) The date, time, and place upon which the governing body will hold a public protest hearing regarding the imposition of the charge, and notice that the governing body will hear and consider all objections or protests, if any, to the proposed charges.

(Added by Stats.1988, c. 834, § 1.)

§ 54984.4. Notice of hearing

(a) The local agency shall cause notice of * * * the date, time, and place of hearing on the charge to be published, pursuant to Section 6066, prior to the date set for hearing, in a newspaper of general circulation printed and published within the jurisdiction of the entity, if there is one, and if not, then in a newspaper of general circulation printed and published in the county.

* * (b) The local agency shall also cause a notice in writing of the date, time, and place of hearing on the charge to be mailed * * * at least 21 days prior to the date set for hearing, to each owner of land described in the resolution initiating proceedings. The mailed notice shall include the name and address of the local agency, a description of the charge and method by which it is proposed to be imposed, the amount of the charge or a schedule of charges, the address or addresses of the place or places where the resolution adopted pursuant to Section 54984.3 may be reviewed, and a summary of the procedures for making a protest set forth in Section 54984.6. The notice shall be mailed to the address shown on the last equalized assessment roll, or known to the secretary or clerk of the local agency.

(Added by Stats.1988, c. 834, § 1. Amended by Stats.1992, c. 492 (A.B.3304), § 1.)

§ 54984.5. Hearing

At the time and place stated in the notice, the governing body shall conduct the hearing, and shall hear and consider all objections or protests, if any, to the resolution referred to in the notice, and may continue the hearing from time to time. Upon the conclusion of the hearing, the governing board may adopt, revise, change, reduce, or modify, or withdraw a charge. The governing board shall make its determination upon each assessment or charge described in the resolution, which determination shall be final.

(Added by Stats.1988, c. 834, § 1.)

§ 54984.6. Protest by landowner; contents; withdrawal

(a) Any landowner desiring to make a protest shall do so by written communication filed with the local agency not later than the hour set for the hearing. A protest by a landowner shall contain a description sufficient to identify the land owned by the landowner. A written protest may be withdrawn at any time before the determination on the charge by the governing body.

(b) If the governing body receives written protests which are not withdrawn at the time of determination by the governing body, which protests represent 40 percent of the parcels subject to the charges authorized by this chapter, no further proceedings may be had under this chapter until a period of one year shall have passed from the time of the initiation of this procedure.

(c) If the governing body receives written protests which are not withdrawn at the time of the determination by the governing body, which protests represent 15 percent or more of the parcels subject to the charges authorized by this chapter the governing body may still adopt, revise, change, reduce, or modify a charge, but all the charges are ineffective until collectively approved by a majority of the vote in an election within the affected territory in which the owner of one or more parcels may cast one vote for each parcel owned within the affected territory.

(Added by Stats.1988, c. 834, § 1.)

§ 54984.7. Continuation of charge in successive years at same rate; notice

If the procedures set forth in this chapter have been followed in a given year, the governing body may, by resolution, continue the charge in successive years at the same rate and in the same manner, but dispensing with the requirement for mailed notice. The local agency shall cause notice of the intent to adopt the resolution to be published pursuant to Section 6066, prior to the date set for adoption, and shall hear any and all objections at the time and place set forth in the notice. The governing body shall, at the time and place specified, conduct the hearing and consider all objections to the assessment, if any. The governing body may, thereafter, adopt, revise, reduce, or modify the assessment or charge, but may not increase the charge, or may overrule any and all objections. The determination of the governing body shall be final. This section shall not apply if the amount of the assessment is increased, or if the governing body makes any change in the areas subject to the assessment, compared to the prior year's assessment.

(Added by Stats.1988, c. 834, § 1. Amended by Stats.1992, c. 1208 (A.B.2635), § 4.)

§ 54984.8. Final determination; collection

After the making of a final determination pursuant to Sections 54984.5 and 54984.7 and after any required majority approval by the voter within affected territory the local agency shall cause the charge to be collected at the same time, and in the same manner, as is available to it under applicable law.

(Added by Stats.1988, c. 834, § 1.)

§ 54984.9. Delinquent charges; lien; filing of certificate

(a) A local agency may, by resolution or ordinance, provide that charges that have become delinquent, together with interest and penalties thereon, are a lien on the property when a certificate is filed in the office of the county recorder pursuant to subdivision (b), which lien has the force, effect, and priority of a judgment lien.

(b) A lien under this section attaches when the district files for recordation in the office of the county recorder a certificate specifying the amount of the delinquent charges together with interest and penalties thereon; the name of the owner of record of the property which is subject to the charges; and the assessor's parcel number and legal description of the property. Within 30 days of receipt of payment of all amounts due, including recordation fees paid by the district, the district shall file for recordation a release of the lien.

(Added by Stats.1988, c. 834, § 1.)

CHAPTER 12.5

COUNTY FEES

Chapter 12.5 was added by Stats. 1985, c. 295, § 1.

Cross References

Processing fee for payment of delinquent taxes in installments, see Revenue and Taxation Code § 4217.

Processing of an application for separate valuation of any parcel for redemption, see Revenue and Taxation Code § 4151.

Processing of an application for separate valuation of parcel on current roll, see Revenue and Taxation Code § 2821.

APPENDIX E

Preliminary Project Plans and Specifications

PLACER COUNTY WATER AGENCY
P.O. BOX 6570
AUBURN, CA 95604

SECTION T - TECHNICAL PROVISIONS

10. CANAL GUNITING

10.1 Description - Work under this section includes furnishing, preparation, mixing, and placing of gunite as specified herein. Gunite shall be applied by the dry-mix process. The standards referenced below will be utilized in this application.

ASTM C33-84	Specification for Concrete Aggregates
ASTM C150-84	Specification for Portland Cement
ASTM 494-82	Specification for Chemical Admixtures for Concrete
ACI 506-83	Recommended Practice for Shotcreting

10.2. Materials

10.2.1. Cement - Cement shall be clean, fresh, Type II Portland cement and shall be an approved brand conforming to ASTM C150. Type III (High Early Strength) cement is also acceptable when authorized by the Agency.

10.2.2. Water - Water shall be clean and free from deleterious amounts of silt, oil, acids, alkali, salts, organic substances and shall contain no chlorides, calculated as Cl, in excess of 1000 ppm, or sulfates in excess of 1000 ppm. Water pressure shall be at least 15 psi above the air pressure at the nozzle.

10.2.3. Sand - Sand shall be washed, clean, sound and free of deleterious coatings, clay balls, wood, or other extraneous material and, at the time of batching, shall conform to ASTM C33, C88, and C131. Sand shall be furnished in the primary sizes specified in ASTM C33. Sand shall be hard, dense, durable particles or either sand or crushed stone regularly graded from coarse to fine. Gradation shall be adjusted for best performance as approved by the Agency. Sand shall have a moisture content between 3% and 6%.

10.2.4 Accelerator - No admixtures shall be added to the gunite mix except a liquid or powdered set accelerator. The accelerator shall meet the requirements of ASTM Designation C494, Type C, except for the restrictions on the time of initial set, and the percent of minimum compressive strength of control specimens over 7 days of age. The proposed set accelerator shall be tested for compatibility with the gunite

mix. The maximum initial set time shall be 3 minutes, and the maximum final set time shall be 12 minutes. Use of calcium chloride will not be permitted. Approved accelerators are:

Dry Shot	(Sika Chemical Corporation)
Sikaset Sigunit Powder	(Sika Chemical Corporation)

10.2.5. Fibers - Polypropylene fibers shall be used in all gunite at a rate of 1.5 lbs per cubic yard.

10.3. Proportioning and Mixing - A minimum of 7 sacks and a maximum of 8 sacks of cement per cubic yard of gunite shall be used. The basic proportions of the gunite shall consist of 1 part cement to 4 parts sand by weight. Contractor shall submit to the Agency for approval the actual proposed mix design, including admixtures, before beginning placement. Batch weight of the sand shall be on a saturated-surface-dry basis. Mix proportions shall be such that nominal 3-inch diameter cylindrical specimens, core-drilled from in place gunite will pass a minimum unconfined compressive strength test of 4,000 psi at 28 days.

The dry mix process of guniting shall be used. The materials shall be thoroughly and uniformly mixed in a dry state in an approved mixer for a period of not less than 1 1/2 minutes for 1 cubic yard of gunite, with an additional 30 seconds for each additional cubic yard of gunite. Mixes allowed to stand for more than 1 hour shall not be used.

The equipment proposed for use shall be capable of mixing and delivering a high-quality, well mixed mixture with reliability. A sufficient quantity of compressed air at proper pressure shall be available in order to maintain a clean airflow adequate for sufficient nozzle velocity and for operation of a blow pipe for clearing away rebound. Communication shall be maintained between the mixer and the delivery equipment at all times.

10.4 Preparation

10.4.1. Preparation of Foundation - The foundation for areas to receive gunite shall be evenly graded before the mortar is applied and no point on the graded slope shall be above the slope plane shown on the plans or directed by the Engineer.

The areas shall be thoroughly compacted, with sufficient moisture to provide a firm foundation and to prevent absorption of water from the mortar, but shall contain no free surface water.

Existing facilities to receive gunite shall be trimmed to create smooth transitions and flows, cleaned and cleared of all vegetative growth, rocks, sediment and all other objectional material to one foot beyond the limits of the

gunite application. When shown on the plans, joints, side forms and shooting strips shall be provided for backing or paneling. Ground or gauging wires shall be used where necessary to establish thicknesses, surface planes and finish lines.

10.5. Placement of Gunite

10.5.1. General - All gunite layers shall be built up to their specified thicknesses in such a number of passes providing that no sloughing of freshly placed material occurs. However, each layer shall be placed in one continuous operation except where there is evidence of sagging, excess moisture, or other defects, in which case no further gunite shall be placed over the defective areas until they have been cut out and prepared for fresh satisfactory gunite. Final gunite thickness for each area will be specified by PCWA.

10.5.2. Equipment and Crews - Foremen, machine operators, and nozzlemen employed in guniting operations shall be experienced on comparable projects and meeting the requirements of ACI 506. Generally, foremen must have 2 years of applicable experience and machine operators and nozzlemen must have 6 months of applicable experience. Nozzlemen who demonstrate adequate skill at guniting may be approved by the Agency even if they do not have 6 months of experience. All equipment which is to be used for the guniting operations must be approved by the Agency. All batching equipment must be capable of performing accurate measurement so as to produce a uniform material. Weighing and flow meter devices shall be maintained accurate within +/- one percent of the correct weight, volume, or flow rate throughout the range of use.

The gunite batching and mixing equipment as well as equipment required to deliver material to the nozzle shall be approved by the Agency.

Any personnel or equipment not proving satisfactory for this type of guniting work according to the above requirements in the opinion of the Agency, shall immediately be removed by Contractor upon written notification by the Agency.

10.5.3. Batching and Mixing - At the time of batching and mixing, the temperature of the mixture, prior to adding water, shall be above 38 degrees Fahrenheit. The water temperature shall be adjusted by cooling, heating, or adding ice to obtain a gunite temperature of at least 45 degrees Fahrenheit as shot when air temperatures fall below 40 degrees Fahrenheit, or less than 70 degrees Fahrenheit as shot when air temperatures exceed 90 degrees Fahrenheit. Temperature of the gunite as shot shall always fall between 40 degrees and 80 degrees Fahrenheit. The mixture shall be uniform and shall be

continuously supplied to the delivery equipment so as to assure uninterrupted operation.

10.5.4. Operation of Pneumatic Equipment - The nozzleman shall have complete and safe freedom of movement. A nozzleman's helper equipped with an air blow pipe shall attend the nozzleman in order to keep the work area free from rebound.

The nozzle shall be kept at a distance of between 2 1/2 and 3 1/2 feet from the surface on which the gunite to be applied and in such a position that the material shall impinge as nearly as possible at right angles to the surface except at interior corners. Loose sand or rebound shall be removed prior to placing a succeeding layer of gunite.

Rebound shall be kept to a minimum. Rebound material shall not be reused.

Nozzle velocity shall be 275 to 500 feet per second for 3/4 inch to 1 inch nozzles, and 425 to 500 feet per second for 1 1/4 inch nozzles.

10.5.5. Work Stoppages - Placement shall be interrupted in case of sagging, excessive moisture, rebound pockets, or other defects. Before placement may be resumed, the bonding surface shall be processed in compliance with either of two alternative procedures as follows:

Alternate 1 - Before initial set, all defective gunite shall be cut out, and all laitence shall be removed by carefully performed light brooming.

Alternate 2 - After final set loose rebound shall be brushed off, rebound pockets and other defective gunite shall be cut out, and all laitence shall be removed by dry sandblasting or high pressure water jetting.

10.5.6. Construction Joints - Construction Joints caused by work stoppages shall have tapered edges forming an angle of 30 degrees or less with the flat surface of the joint. In no case will square shoulders be allowed.

10.5.7. Clean-up and Disposal - Cleanup and disposal of waste gunite is the responsibility of the contractor.

10.6. Repairs to Gunite - The surface of previously placed gunite shall be thoroughly sounded with a hammer to determine the location of any drummy areas which have resulted from rebound pockets, lack of bond, or other reasons. All such drummy areas, sags or other defects shall be cut out and replaced with suitable gunite during application of the succeeding gunite. All gunite which, in the opinion of the Agency, fails to comply with the provisions of this

Section shall be chipped out and replaced with acceptable gunite by the Contractor at the Contractor's expense. Wire fabric may be removed, however, replacement wire shall overlap existing wire a minimum of 1 square. If the wire fabric is left in place it shall not be damaged.

10.7. Quality Control

10.7.1. Testing, Control, and Inspection

10.7.1.1. General - Sampling and maintenance of quality control shall be the responsibility of Contractor. The Agency may carry out compression and other tests on the samples taken. The Chief Engineer will inspect, from time to time, all aspects of the work and may carry out tests on the gunite in place and on the batch weights, grading and moisture content of the aggregates. Contractor shall be required to remove gunite in those locations where representative test specimens fail to comply with the provisions setforth in these specifications.

10.7.1.2. Fabrication of Test Panels - Test panels are used to demonstrate the strength of the gunite mix and the qualification of the nozzleman per paragraph 10.5.2. of this Section and shall be fabricated as follows:

A test panel measuring 2 feet by 2 feet minimum or as directed by the Agency shall be constructed by application of gunite to a smooth wood or steel surface using the same equipment, air quantity and pressure, water content, and materials as will be employed for the actual work. The test panels shall be fabricated by the nozzleman who will be employed for the actual work. Application shall be not less than 3.5 inches in thickness. One test panel must be shot prior to the start of work, and must be clearly marked with a number and date. Other test panels will be required as deemed necessary by the Chief Engineer.

The test panels shall be protected against being disturbed for a period of 6 hours or as directed by the Agency, after which they may be tested by the Agency.

PLACER COUNTY WATER AGENCY
P.O. BOX 6570
AUBURN, CA 95604

SECTION T - TECHNICAL PROVISIONS

11. RIPRAP

Unless otherwise specified on the plans, riprap shall be quarry run 4" - 8" angular rock, with no rocks larger than 12" in any dimension and less than 2% by weight passing a 4" sieve.

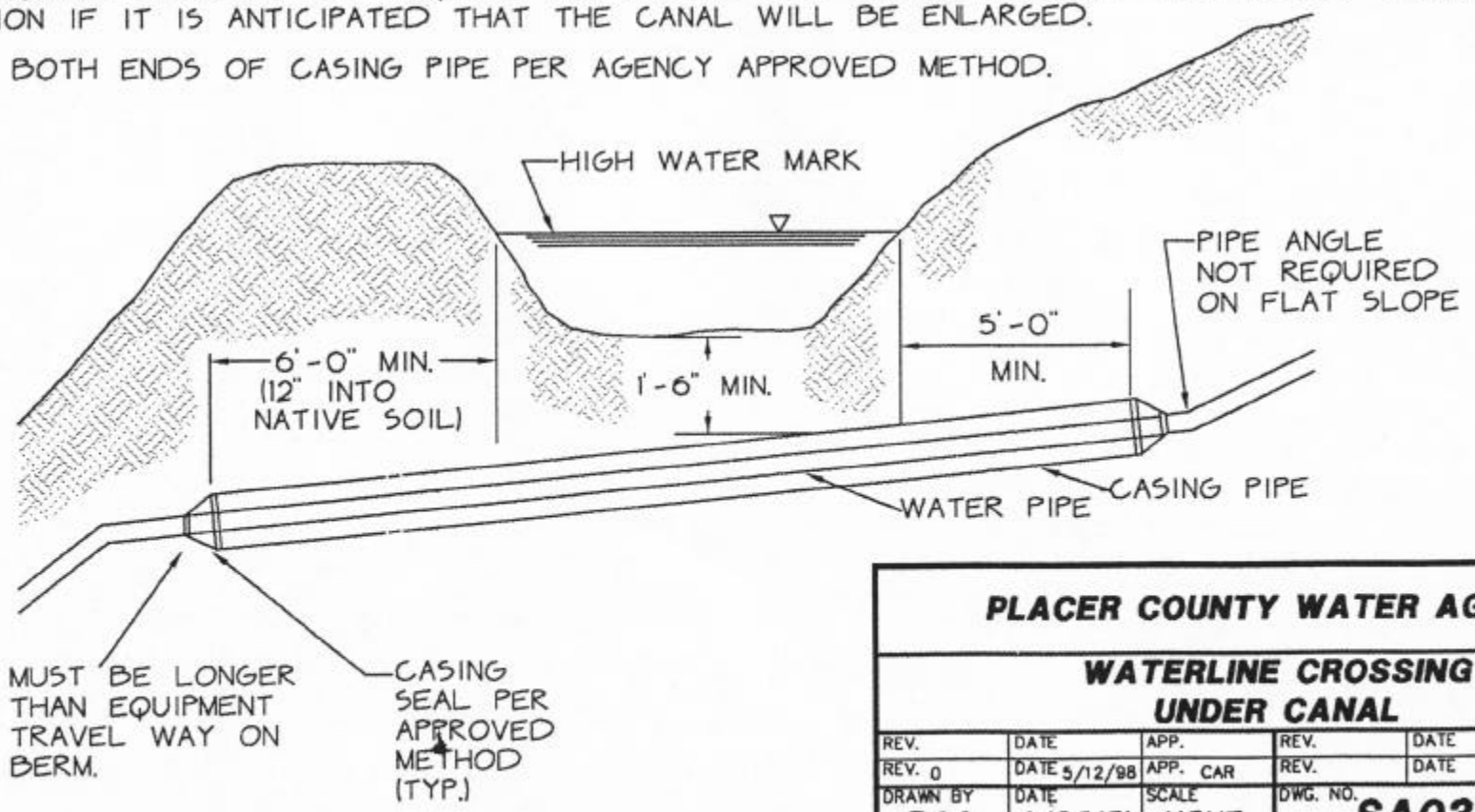
Flat or elongated shapes will not be accepted unless the thickness of the individual pieces is at least one-third of the length. Stone shall be sound, durable, hard, resistant to abraison and free from laminations, weak cleavage planes, and the undesirable effects of weathering. It shall be of such character that it will not disintegrate from the action of air, water, or the conditions to be met in handling and placing.

All material shall be clean and free from deleterious impurities, including alkali, earth, clay, refuse, and adherent coatings. The material, if in question, may be subject to the following tests and requirements:

TESTS	TEST METHOD	REQUIREMENTS
Apparent Specific Gravity	ASTM C 127	2.20 Min.
Absorption[1]	Calif. #206	4.2 % Max.
Durability[1]	Calif. #229	52 Min.

NOTES

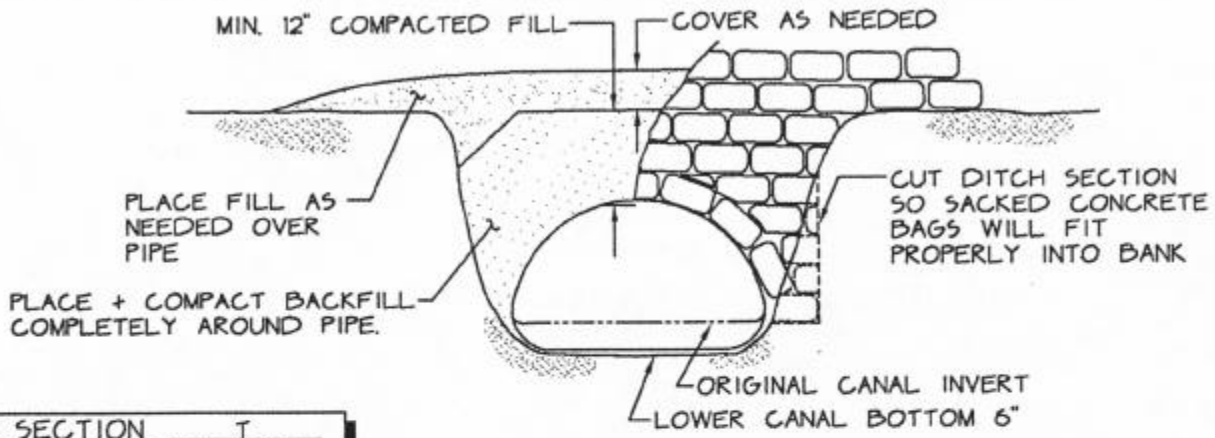
1. CASING PIPE SHALL BE CONTINUOUS DUCTILE IRON PIPE. FOR WATER PIPE DIAMETERS 2 INCHES OR LESS, A 4 INCH MINIMUM DIAMETER CASING PIPE WILL BE REQUIRED. A WATER PIPE LARGER THAN 2 INCHES IN DIAMETER WILL REQUIRE A CASING PIPE AT LEAST 2 INCHES MORE THAN THE WATER PIPE DIAMETER.
2. CANAL OUTAGES MUST BE APPROVED BY THE AGENCY IN ADVANCE.
3. THE CANAL CROSS SECTION MUST BE RECONSTRUCTED AFTER THE CROSSING IS INSTALLED TO ITS ORIGINAL SHAPE. BACKFILL MATERIAL MUST BE SIMILAR TO THE EXCAVATED MATERIAL AND BE COMPACTED TO ITS ORIGINAL DENSITY. THE CANAL SHALL BE GUNITE LINED 10' ON EITHER SIDE OF THE PIPELINE. GUNITE SHALL EXTEND TO THE TOP OF THE BERM.
4. THE AGENCY ENGINEER MAY REQUIRE THE CASING PIPE EXTEND BEYOND THE PRESENT CANAL CROSS SECTION IF IT IS ANTICIPATED THAT THE CANAL WILL BE ENLARGED.
5. SEAL BOTH ENDS OF CASING PIPE PER AGENCY APPROVED METHOD.



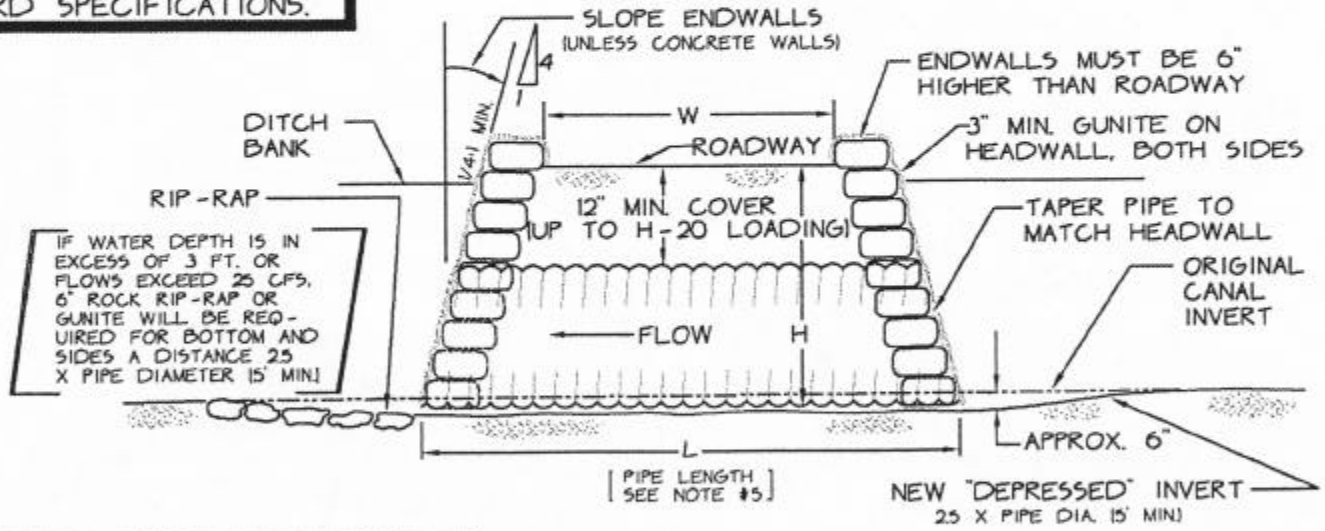
PLACER COUNTY WATER AGENCY

WATERLINE CROSSING UNDER CANAL

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.
DRAWN BY DCC	DATE 6/27/91	SCALE NONE	DWG. NO. SA036	SHT.	REV. 0



NOTE: SEE SECTION T OF STANDARD SPECIFICATIONS.



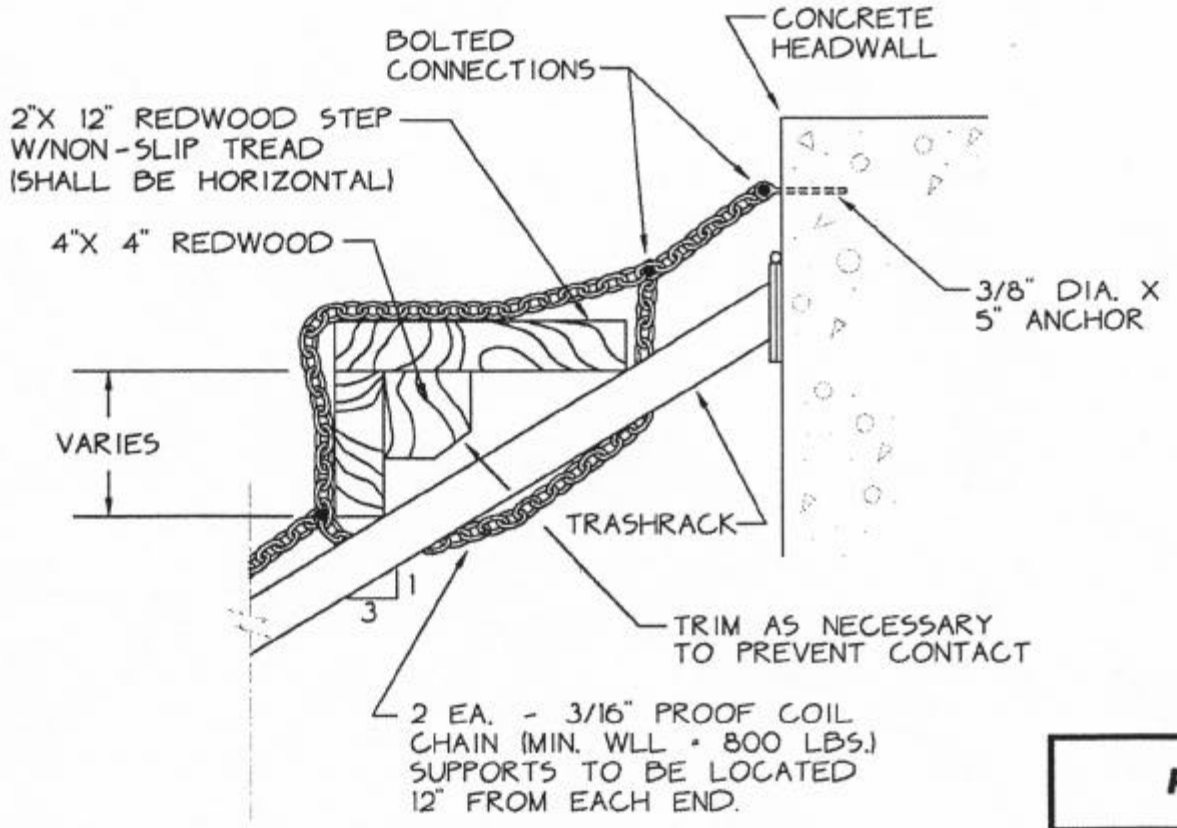
ARCH PIPE	GAGE	
(APPROX.) SPAN X RISE	STEEL	ALUMINUM
22" X 13"	16	14
25" X 16"	16	14
29" X 18"	16	14
36" X 22"	14	12
43" X 27"	14	12
50" X 31"	12	10
58" X 36"	12	10
65" X 40"	12	10
72" X 44"	10	8
73" X 55"	10	8
81" X 59"	10	8

PLACER COUNTY WATER AGENCY

CANAL CULVERT INSTALLATION

REV.	DATE	APP.	REV.	DATE	APP.		
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.		
DRAWN BY DCC	DATE 6/27/91	SCALE NONE	DWG. NO. SA035			SHT.	REV. 0

NOTE: SEE SECTION T OF STANDARD SPECIFICATIONS.



SIDE VIEW

PLACER COUNTY WATER AGENCY

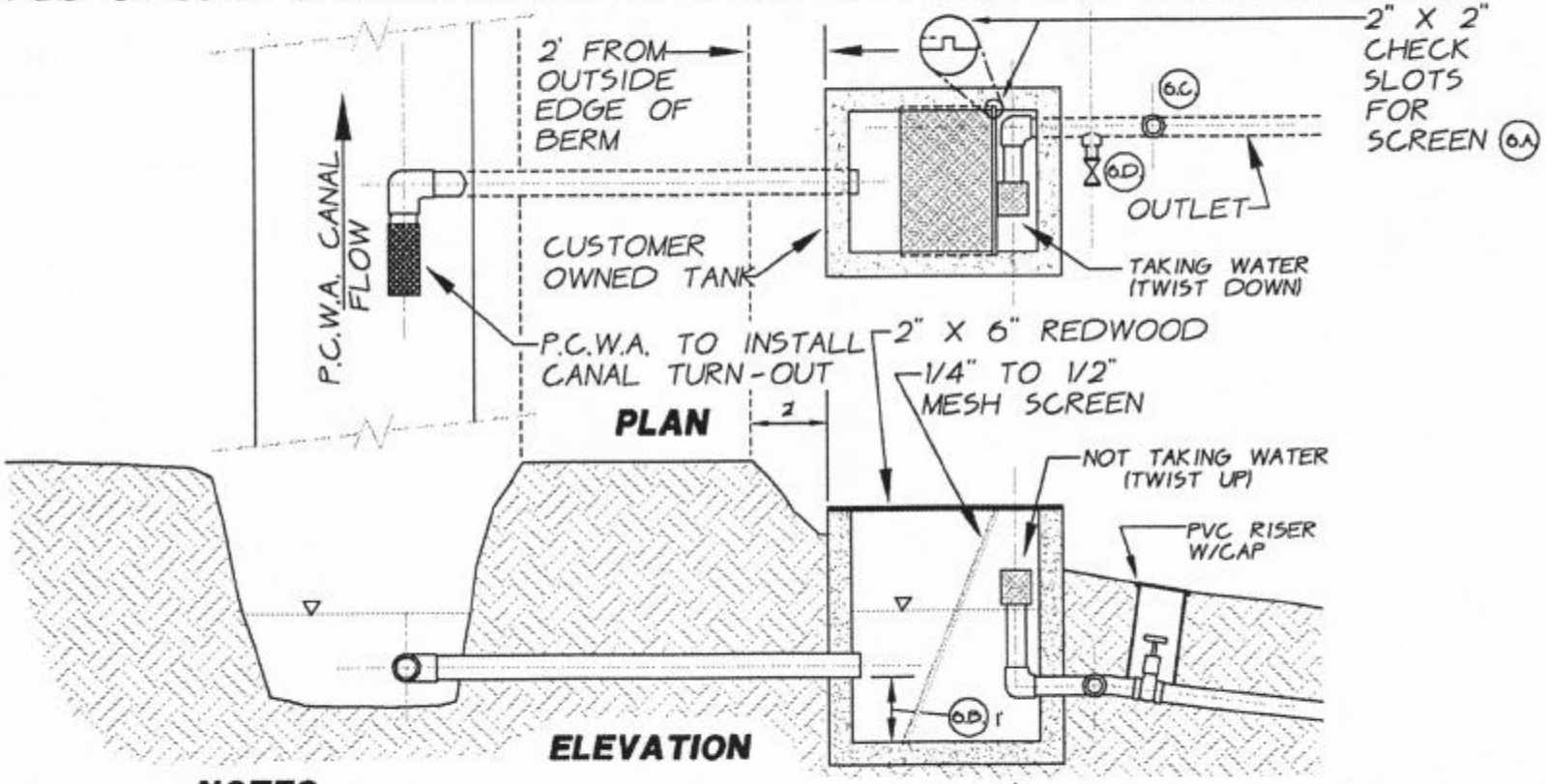
FLOATING TRASHRACK ACCESS STEP

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.

DRAWN BY	DATE	SCALE	DWG. NO.	SHT.	REV.
DCC	2/1/90	NONE	SA031		0

NOTES

1. STABILITY OF BERM MUST NOT BE ENDANGERED DUE TO SUMP INSTALLATION.
2. MATERIAL FO CONSTRUCTION MAY BE CHOSEN BY CUSTOMER. BOX SHALL BE WATER TIGHT.
3. A 4' X 4' X 1' TANK = 120 GAL. ± (1 CU. FT. = APPROX. 7.5 GALS.)
4. TOP OF STRUCTURE LEVEL W/TOP OF CANAL BANK, OR AS DETERMINED BY PCWA REPRESENTATIVE.
5. TANK LID OR COVER SHALL BE CAPABLE OF SUPPORTING A POINT LOAD (WEIGHT) OF 200 LBS.



NOTES

(CONTINUED)

6. IT IS RECOMMENDED THAT THE CUSTOMER OWNED TANK HAVE THE FOLLOWING PROVISIONS IN ORDER TO GIVE SATISFACTORY SERVICE:
   A. SLOTS FOR SCREENS AS SHOWN.
   B. ALLOW 1 FT. DEPTH IN BOX BELOW OUTLET PIPE FOR SETTLEMENT.
   C. PROVIDE SHUT-OFF VALVE AT OUTLET FROM TANK.
   D. PROVIDE FLUSHING OUTLET.

PLACER COUNTY WATER AGENCY

SUGGESTED CUSTOMER IRRIGATION WATER RECEIVING TANK

REV.	DATE	APP.	REV.	DATE	APP.
REV. 0	DATE 5/12/98	APP. CAR	REV.	DATE	APP.
DRAWN BY	DATE	SCALE	DWG. NO.	SHT.	REV.
DCC	7/30/91	NONE	SA040		0

APPENDIX F

Customer Water Use Study prepared by MBK Engineers, November 2000

PLACER COUNTY WATER AGENCY

Customer Water Use Study

Prepared by:

MBK ENGINEERS

2450 Alhambra Blvd., 2nd Floor
Sacramento, CA 95817

November 2000

Purpose and Scope

This report provides the results of a study of the assumptions regarding customer water use used in the Comparison of Gaged Flows with Customer Use for July reports (July Reports) prepared annually for the canals within Zones 1 and 3 of Placer County Water Agency (PCWA). Specifically the assumptions referred to involve the head over the delivery pipes and the amount of time each month the customers are actually taking water. As identified in the July Reports, monthly use in acre-feet is computed from total miners-inches times 1.537 AF per inch for the 31-day month of July times the 70% factor. The 70% factor is derived from the assumption that customers use water half of the time however, most delivery pipes are set low in the canal walls in order to provide a 6-inch head during the lower winter flow and water level. The July Reports assume the actual head on the average delivery pipe is 12-inches. Doubling the head from 6-inches to 12-inches increases the delivery about 40%. The 70% factor is based on one-half of 140%. As the July Reports state the assumption of a different factor would change the indicated losses.

Based on discussions with PCWA personnel it was determined to limit the initial study to three canals, the Lower Banvard Canal, the Lower Greeley Canal, and the Caperton Canal. The Lower Banvard and Lower Greeley Canals were chosen because it was determined they were representative of PCWA's smaller canals and because it was relatively easy to monitor all of the inflow and outflow to them. The Caperton Canal was chosen because it represents one of the larger canals within Zones 1 and 3 and because the annual comparison reports show high indicated losses despite significant efforts by PCWA in recent years to reduce losses through guniting and other measures. The study period for this report was August 1999. Additional work was conducted during July 2000 to evaluate the indicated losses in various sections of the Caperton Canal.

In addition to evaluating the assumptions regarding customer deliveries, a review of the quantity and timing of outflow from these canals was made.

Sources of Data

Gaged Canal flows for this study were obtained from several sources. Records of deliveries to the Lower Greeley and Lower Banvard Canals were obtained from PG&E. These records consisted of stage readings taken at 15-minute intervals. Stage was

converted to flows based on the existing PG&E ratings for these locations. Additional inflow and outflow data were obtained from gages installed and maintained by PCWA. In order to determine inflow to the Lower Greeley Canal from the Upper Greeley Canal and outflow from the Lower Greeley Canal pressure transducers and data loggers were installed near the end of each canal. The pressure transducers and data loggers were installed calibrated and maintained by PCWA personnel. Stage readings were collected at 5-minute intervals. The corresponding flow for the inflow from the Upper Greeley Canal was derived using the standard equation for a 4-foot suppressed sharp crested weir. In order to determine the outflow from the Lower Greeley Canal a temporary check structure fitted with a 1-foot sharp crested rectangular weir was installed near the end of the Lower Greeley Canal. The outflow from the Lower Greeley Canal was calculated using a standard equation for a 1-foot contracted rectangular weir. This rating was verified by two current meter measurements.

In order to determine inflow to the Lower Banvard Canal from the Upper Banvard Canal and outflow from the Lower Banvard Canal pressure transducers and data loggers were installed near the end of each canal. The pressure transducers and data loggers were installed calibrated and maintained by PCWA personnel. Stage readings of the inflow from the Upper Banvard Canal were collected at 5-minute intervals. Stage readings of the outflow from the Lower Banvard Canal were collected at 2-minute intervals. The corresponding flow for the inflow from the Upper Banvard Canal was calculated using the standard equation for a 2.25-foot suppressed sharp crested weir. In order to determine the outflow from the Lower Banvard Canal a temporary check structure fitted with a 1-foot sharp crested rectangular weir was installed near the end of the Lower Banvard Canal. The outflow from the Lower Banvard Canal was calculated using a standard equation for a 1-foot contracted rectangular weir.

Inflow and outflow from the Caperton Canal during August 1999 was derived using the exiting chart recorders and ratings at the head of the Caperton Canal (YB168) and at the 3-foot Parshall flume at Whitney Reservoir near the end of the canal. These gages were augmented with pressure transducers and data loggers installed at the existing gages located at Clark Tunnel Road (YB183) and Sierra College Boulevard (YB183A) during the July 2000.

In addition to the stage readings, measurements of the head over each service on all three canals were taken and provided by PCWA personnel. Information regarding the C.T.O. size and the delivery in miners-inches was also provided by PCWA. Based on discussions with PCWA personnel it is assumed the orifices used for pipe service customers have been sized to compensate for pressure differences to assure delivery

778.5 miners-inches or 1,196.6 acre-feet for the month. Using these figures results in a use factor of approximately 107.5%. This is significantly higher than the 70% factor used in the annual July Reports and exceeds the amount purchased.

The head shown in Table 11 was measured at a time when the inflow at YB-168 was between 22 cfs and 23.8 cfs. This is between 13 and 20 percent less than the average rate of flow of 27.4 cfs for the month of August. Therefore, the measured head shown in Table 11 underestimates the average head and therefore, the actual delivery during August 1999. Based on Table 11 the average head on delivery pipes along the Caperton Canal was approximately 8.5 inches. Increasing the head from 6-inches to 8.5-inches results in an average increased delivery of approximately 20%. This increased delivery would suggest the average customer on the Caperton Canal system used or took delivery of water approximately 90 % of the time during August 1999. However, as stated above, the average head indicated on Table 11 underestimates the actual head during August. Assuming an increase in flow results in an equivalent percentage increase in head, the average head would have been approximately 10-inches. Increasing the head from 6-inches to 10-inches results in an average increased delivery of approximately 29 percent. This would indicate deliveries were taken, on the average, approximately 83% of the time.

Based on discussions with PCWA personnel, several users on the Caperton Canal are either commercial agricultural users or golf courses. These water users may take water continuously during the summer months. Water users purchasing 24 miners-inches or more represent approximately 80% of the purchased water from the Caperton Canal. This would account for the higher calculated time of use compared to the Lower Greeley and Lower Banvard Canals. Table 12 shows the Caperton Canal daily operation for August 1999, assuming customers who purchased 24 miner-inches or more took delivery of water 100% of the time and those customers purchasing less than 24 miner-inches took delivery 50% of the time. The deliveries shown in Table 12 are calculated based on the measured head shown in Table 11. This table shows that although these assumptions appear to accurately reflect the monthly operation, the indicated losses vary widely on a daily basis. The timing of actual use and the variability of the flows may explain this discrepancy. Table 12 also shows the treated water output from the Sunset Whitney Treatment Plant and the calculated spill from Whitney Reservoir.

Table 13 shows the daily operation of the Caperton Canal for July 2000. Deliveries shown in Table 13 are based the assumption that customers who purchase 24 miner-inches or more take delivery of water 100% of the time and those customers

purchasing less than 24 miner-inches take delivery 50% of the time. Table 13 shows based on these assumptions the indicated loss from YB-168 to YB-182 was 0.36 cfs or approximately 1.2% of the average flow entering this reach. The indicated loss from YB-182 to YB-183A was 1.56 cfs or approximately 7.3% of the average flow entering the reach. The table indicates a gain in the reach between YB-183A to Whitney Reservoir of 0.43 cfs or approximately 2.7% of the average flow entering the reach. This gain may be due to timing and use of water from Caperton Reservoir. The indicated loss for the entire canal based on these assumptions would be approximately 7%. Using the 70% factor used in the July Reports the indicated losses for these same reaches would be 24%, 38% and 24% respectively and 29% overall. The calculated use factors applied to the customer water purchases, based on the time of use assumptions identified above, would be 108% for the reach from YB-168 to YB-182, 105% from YB-182 to YB-183A, and 110% from YB-183A to Whitney Reservoir. Use factor greater than 100% are due to the increase in delivery due to the actual head over the delivery pipes compared to 6-inches and the high time of use patterns of the large water users along the Caperton Canal.

Outflow Analysis

Indicated losses identified in the July Reports are based on measured flows at various locations and as well as customer use. In most cases the measured flows are based on periodic readings taken by canal operators at the numerous gage sites within Zones 1 and 3. Readings are generally taken once per day, 3 to 5 days per week however; less frequent readings are taken at some locations. Except for the Boardman and Caperton Canals, most canals do not have gages at the end to measure outflow. Therefore unmeasured outflow is included in the indicated loss.

Table 1 shows the total outflow from the Lower Greeley Canal during August 1999 was 60.1 acre-feet. This represents approximately 16% of the total inflow to the canal. Figures 1A-E are plots of 5-minute outflow readings for the month. The plots show outflow is generally higher in the morning and lower in the afternoon. No discernable weekly pattern is observed from the data shown in these plots. Outflow ranged from as much as 2 cfs to very little or no outflow at all on several occasions.

Based on these plots it would appear inflow YB-91 deliveries from PG&E could have been reduced by as much as 0.5cfs for a total 9 days and up to1.0cfs for a total of three days during the month without resulting in customer outages at the end of the canal. These reductions in deliveries from PG&E would have resulted in savings of

approximately 15AF or 25% of the 60.1AF measured outflow shown in Table 1. Outflow fluctuates due to changes in customer demand and weather. Changes in PG&E deliveries must be made several hours in advance making. This makes management of outflow on a real time, or daily, basis difficult.

Table 5 shows the total outflow from the Lower Banvard Canal during August 1999 was 68.4 acre-feet which represents approximately 11.5% of the total inflow to the canal. Figures 2A-E are plots of the outflow measured at 2-minute intervals at the end of the Lower Banvard Canal during August 1999. These figures show outflow generally peaks in the late morning or midday and tapers off in the afternoon. No discernable weekly pattern is observed. Also, like the Lower Greeley Canal, the plots suggest deliveries from PG&E at YB-73 could have been reduced during certain times of the month. This is especially evident during the first 7 days of the month and between the 10th and the 15th and again from about the 25th to the 31st. It is estimated total outflow could have been reduced by approximately 24 acre-feet without resulting in customer outages. This 24 acre-foot represents about 35% of the 68.4 acre-feet of measured outflow.

Table 12 shows the outflow from the Caperton Canal calculated, as spill from Caperton Reservoir, during August 1999 was approximately 81AF or less than 5% of the total inflow to the canal. The two reservoirs, Whitney and Caperton, located at or near the end of the canal allow the operators flexibility in regulating the flow in the lower reach of the canal thereby minimizing irrecoverable outflow.

Conclusions and Recommendations

The data presented above indicates the average head on the delivery pipes in the three canal systems studied is less than the 1-foot suggested in the July Reports. However, the data also suggests the average customer may take delivery of water more often than 50% of the time as suggested in the July Reports.

Data collected during August 1999 indicate 69.4% of the water ordered was delivered to PCWA customers on the Lower Greeley Canal. The data for the Lower Banvard Canal indicate 66% of the water ordered was delivered to PCWA customers during this period. These calculated use factors compare closely with the 70% factor used in the July Reports to estimate customer use and canal losses. These calculated use factors are based on a single month's inflow and outflow data and assume no losses within the canal systems. Therefore, based on the above the 70% factor used in the annual reports of Comparison of Gaged Canal Flows with Customer Use for July is considered a reasonable estimate of the actual use for these smaller canal systems.

Time of use for the golf courses and the larger agricultural customers on the Caperton Canal tend to take continuous delivery of water during the summer months. Data collected during August 1999 and July 2000, indicate a reasonable calculated use factor for the Caperton Canal is 107.5. In order to better estimate losses in the various reaches of the Caperton the use factors applied to the customer water purchases should be 108% for the reach from YB-168 to YB-182, 105% from YB-182 to YB-183A, and 110% from YB-183A to Whitney Reservoir. These use factors were determined based on the measured head at each service and the assumption that customers ordering 24 miners-inches take delivery of water 100% of the time and those ordering less than 24 miners-inches take delivery 50% of the time.

Based on the data collected on the Lower Greeley and Lower Banvard Canal systems, unmeasured outflow may account for more than 10% of the of the indicated losses in many of the canals in Zones 1 and 3. However, some outflow is necessary to assure water is available to meet customer demands at or near the ends. This necessary outflow should be considered a required operational spill and not a loss. The data suggests outflow may vary widely from one canal or system to another. Additional study is required to determine how much operational spill is required.

Outflow fluctuates widely day to day and hour to hour due to changes in customer demand and the weather. Changes to inflow make take several hours to be seen as reduced outflow. PG&E requires notice of several hours in advance of making changes in their deliveries to PCWA. This makes management of outflow on a real time, or daily, basis difficult.

Reservoirs on canals, such the Caperton Canal, tend to minimize outflow by allowing excess flow to be held for later use. These reservoirs also minimize outages when inflow is insufficient to meet all demands.

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TABLES

Table 1

Lower Greeley Canal
August 1999 Daily Flow Summary

DATE	Inflow			Outflow
	PGE Delivery at YB-91 a	Upper Greeley Spill b	Total Inflow c (a+b)	Lower Greely at End d
1	6.10	0.20	6.30	0.92
2	6.10	0.17	6.27	0.90
3	6.30	0.13	6.43	1.08
4	6.40	0.14	6.54	1.52
5	6.50	0.16	6.66	1.64
6	6.50	0.18	6.68	1.59
7	6.20	0.21	6.41	1.47
8	6.00	0.18	6.18	0.96
9	6.10	0.16	6.26	1.01
10	6.20	0.17	6.37	1.23
11	6.20	0.17	6.37	1.36
12	5.90	0.15	6.05	1.17
13	5.50	0.17	5.67	0.49
14	5.40	0.18	5.58	0.43
15	5.40	0.13	5.53	0.43
16	5.40	0.16	5.56	0.44
17	5.40	0.18	5.58	0.57
18	5.40	0.14	5.54	0.68
19	5.70	0.15	5.85	0.62
20	6.10	0.16	6.26	0.74
21	6.10	0.23	6.33	0.90
22	6.10	0.20	6.30	0.96
23	6.10	0.18	6.28	1.10
24	6.20	0.11	6.31	1.23
25	6.20	0.08	6.28	0.75
26	6.30	0.10	6.40	0.67
27	6.30	0.11	6.41	0.85
28	6.30	0.10	6.40	0.90
29	6.30	0.15	6.45	1.01
30	6.10	0.19	6.29	1.27
31	5.90	0.20	6.10	1.41
Average	6.02	0.16	6.18	0.98
Total AF	370.3	9.8	380.1	60.1

Table 2

Lower Greely Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
10+68	3	1	0.025	12	1.4	0.035
10+68	2	3	0.075	11	4.1	0.102
10+68	2	2	0.050	12	2.8	0.071
10+68	2	1	0.025	12	1.4	0.035
38+88	2	2.5	0.063	8	2.9	0.073
38+96	2	0.5	0.013	10	0.6	0.017
38+97	2	1.5	0.038	12	2.1	0.054
39+04	3	2	0.050	8	2.3	0.058
39+06	2	2	0.050	7	2.2	0.054
39+08	3	3	0.075	7	3.2	0.081
39+11	2	2	0.050	10	2.6	0.065
39+14	2	1	0.025	8	1.2	0.029
39+17	2	1	0.025	7	1.1	0.027
39+20	2	0.5	0.013	5	0.5	0.012
39+23	2	1	0.025	5	0.9	0.023
39+26	2	2	0.050	5	1.8	0.046
39+28	2	2.5	0.063	5	2.3	0.058
44+55	2	0.5	0.013	7	0.5	0.014
44+56	3	3.5	0.088	7	3.8	0.095
44+57	4	10.5	0.263	6	10.5	0.263
45+62	2	1	0.025	7	1.1	0.027
51+85	2	2	0.050	7	2.2	0.054
52+63	4	12	0.300	8	13.9	0.347
55+19	6	11	0.275	8	12.7	0.318
59+23	2	1	0.025	7	1.1	0.027
77+72	6	23	0.575	7	24.8	0.621
77+82	2	1	0.025	8	1.2	0.029
78+12	4	10	0.250	4	8.2	0.204
78+18	4	7.5	0.188	3	5.3	0.133
78+32	2	2	0.050	5	1.8	0.046
80+5	3	2	0.050	6	2.0	0.050
81+04	3	4	0.100	11	5.4	0.135
83+74	2x4"	6	0.150	9	7.4	0.184
93+87	2	1	0.025	4	0.8	0.020
97+19	3	7.5	0.188	7	8.1	0.203
97+19	3	0	0.000	0	0.0	0.000
97+22	3	5	0.125	11	6.8	0.169
101+30	2	1	0.025	8	1.2	0.029
104+90	2	2	0.050	8	2.3	0.058
106+87	2	1	0.025	4	0.8	0.020
106+91	2	1	0.025	5	0.9	0.023
106+95	3	1	0.025	3	0.7	0.018
106+97	2	2	0.050	6	2.0	0.050
107+07	2	2	0.050	12	2.8	0.071
107+10	2	1	0.025	9	1.2	0.031
109+72	2	1	0.025	9	1.2	0.031
109+75	2	3	0.075	9	3.7	0.092
109+82	4	8	0.200	9	9.8	0.245

Table 2

Lower Greely Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
119+30	2	1	0.025	4	0.8	0.020
120+28	2	1	0.025	12	1.4	0.035
124+83	6	24.5	0.613	15	38.7	0.969
124+84	3	5	0.125	12	7.1	0.177
124+85	6	18.5	0.463	10	23.9	0.598
132+99	Pipe Service	3	0.075	6	3.0	0.075
133+00	Pipe Service	1.5	0.038	6	1.5	0.038
133+01	Pipe Service	1.5	0.038	6	1.5	0.038
133+02	Pipe Service	1.5	0.038	6	1.5	0.038
133+03	Pipe Service	2.5	0.063	6	2.5	0.063
Average		3.83	0.10	7.60	4.47	0.11
Total		222.0	5.56		259.5	6.50

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 3

Monte Reo Pipe

Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
18+92	Pipe Service	1	0.025	6	1.0	0.025
20+58	Pipe Service	1	0.025	6	1.0	0.025
20+59	Pipe Service	2	0.050	6	2.0	0.050
20+61	Pipe Service	1	0.025	6	1.0	0.025
20+63	Pipe Service	2	0.050	6	2.0	0.050
21+43	Pipe Service	1	0.025	6	1.0	0.025
23+48	Pipe Service	1	0.025	6	1.0	0.025
23+49	Pipe Service	2	0.050	6	2.0	0.050
25+28	Pipe Service	1	0.025	6	1.0	0.025
27+00	Pipe Service	1.5	0.038	6	1.5	0.038
27+01	Pipe Service	1	0.025	6	1.0	0.025
27+08	Pipe Service	0.5	0.013	6	0.5	0.013
27+10	Pipe Service	1.5	0.038	6	1.5	0.038
27+96	Pipe Service	1	0.025	6	1.0	0.025
29+10	Pipe Service	1	0.025	6	1.0	0.025
34+51	Pipe Service	14	0.350	6	14.0	0.350
39+59	Pipe Service	7	0.175	6	7.0	0.175
51+23	Pipe Service	4	0.100	6	4.0	0.100
51+24	Pipe Service	8	0.200	6	8.0	0.200
51+25	Pipe Service	2	0.050	6	2.0	0.050
51+26	Pipe Service	2	0.050	6	2.0	0.050
51+27	Pipe Service	1	0.025	6	1.0	0.025
Average		2.6	0.06	6.0	2.6	0.06
Total		56.50	1.41		56.50	1.41

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 5

Lower Banvard Canal
August 1999 Daily Flow Summary

DATE	Inflow to Canal			Estimated Spill at YB93A	Measured Outflow
	PGE Delivery at YB-73 a	Upper Banvard Spill b	TOTAL c (a+b)	d	e
1	9.40	0.34	9.74	0.25	1.23
2	9.40	0.31	9.71	0.25	1.08
3	9.40	0.27	9.67	0.25	1.08
4	9.50	0.24	9.74	0.25	1.08
5	9.50	0.32	9.82	0.25	1.27
6	9.10	0.42	9.52	0.25	1.58
7	8.50	0.52	9.02	0.25	1.24
8	8.10	0.50	8.60	0.25	0.61
9	8.30	0.55	8.85	0.25	0.51
10	9.00	0.55	9.55	0.25	1.36
11	9.00	0.64	9.64	0.125	1.74
12	9.10	0.61	9.71	0.125	1.90
13	8.90	0.50	9.40	0.125	1.58
14	8.90	0.43	9.33	0.125	1.41
15	9.00	0.38	9.38	0.125	0.95
16	9.00	0.32	9.32	0	0.47
17	9.10	0.30	9.40	0	0.60
18	9.10	0.33	9.43	0	1.25
19	8.90	0.29	9.19	0	0.73
20	9.00	0.27	9.27	0.125	0.76
21	9.10	0.28	9.38	0.125	1.06
22	9.00	0.25	9.25	0.125	0.59
23	8.90	0.26	9.16	0.125	0.44
24	9.60	0.24	9.84	0.125	0.70
25	10.00	0.25	10.25	0.125	1.01
26	10.00	0.25	10.25	0.125	1.12
27	10.00	0.27	10.27	0.125	1.07
28	10.00	0.33	10.33	0.125	1.51
29	10.00	0.34	10.34	0.125	1.45
30	10.00	0.40	10.40	0.125	1.51
31	9.40	0.51	9.91	0.125	1.58
Average	9.23	0.37	9.60	0.15	1.11
Total AF	567.7	22.8	590.4	9.2	68.4

Table 6

PCWA Lower Banvard Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
10+10	Pipe Service	0.5	0.013	6	0.5	0.013
12+80	Pipe Service	1	0.025	6	1.0	0.025
16+70	Pipe Service	1	0.025	6	1.0	0.025
16+72	Pipe Service	3	0.075	6	3.0	0.075
18+06	Pipe Service	4.5	0.113	6	4.5	0.113
18+07	Pipe Service	0.5	0.013	6	0.5	0.013
18+55	Pipe Service	2	0.050	6	2.0	0.050
20+26	Pipe Service	3	0.075	6	3.0	0.075
20+78	Pipe Service	1	0.025	6	1.0	0.025
25+00	Pipe Service	2	0.050	6	2.0	0.050
25+60	Pipe Service	0.5	0.013	6	0.5	0.013
28+33	4	2	0.050	14	3.1	0.076
42+64	4	6	0.150	6	6.0	0.150
43+13	3	4	0.100	5	3.7	0.091
56+43	4	10	0.250	6	10.0	0.250
59+75	4	5	0.125	6	5.0	0.125
60+92	3	2	0.050	6	2.0	0.050
65+67	3	2	0.050	6	2.0	0.050
65+72	3	2	0.050	8	2.3	0.058
65+85	2	3	0.075	7	3.2	0.081
71+00	2	1	0.025	6	1.0	0.025
74+60	2	1	0.025	12	1.4	0.035
76+74	Pipe Service	3	0.075	6	3.0	0.075
76+75	Pipe Service	4	0.100	6	4.0	0.100
76+85	Pipe Service	1	0.025	6	1.0	0.025
78+53	Pipe Service	1	0.025	6	1.0	0.025
81+55	Pipe Service	1	0.025	6	1.0	0.025
81+58	Pipe Service	1	0.025	6	1.0	0.025
81+62	Pipe Service	1	0.025	6	1.0	0.025
81+67	Pipe Service	10	0.250	6	10.0	0.250
84+00	Pipe Service	1.5	0.038	6	1.5	0.038
87+00	Pipe Service	1	0.025	6	1.0	0.025
88+66	Pipe Service	1	0.025	6	1.0	0.025
89+29	Pipe Service	1.5	0.038	6	1.5	0.038
89+31	Pipe Service	1.5	0.038	6	1.5	0.038
90+86	Pipe Service	1	0.025	6	1.0	0.025
98+03	Pipe Service	3	0.075	6	3.0	0.075
98+04	Pipe Service	1	0.025	6	1.0	0.025
98+06	Pipe Service	1.5	0.038	6	1.5	0.038
98+07	Pipe Service	2	0.050	6	2.0	0.050
98+08	Pipe Service	3	0.075	6	3.0	0.075
98+17	Pipe Service	2	0.050	6	2.0	0.050
98+18	Pipe Service	1	0.025	6	1.0	0.025
98+19	Pipe Service	3	0.075	6	3.0	0.075
98+19.5	Pipe Service	1	0.025	6	1.0	0.025
98+20	Pipe Service	5	0.125	6	5.0	0.125
98+21	Pipe Service	4.5	0.113	6	4.5	0.113
98+22	Pipe Service	1	0.025	6	1.0	0.025

Table 6

PCWA Lower Banvard Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
102+09	Pipe Service	1	0.025	6	1.0	0.025
102+18	Pipe Service	4	0.100	6	4.0	0.100
102+19	Pipe Service	4	0.100	6	4.0	0.100
102+19.5	Pipe Service	4.5	0.113	6	4.5	0.113
102+75	Pipe Service	0.5	0.013	6	0.5	0.013
102+85	Pipe Service	1.5	0.038	6	1.5	0.038
108+04	Pipe Service	2	0.050	6	2.0	0.050
111+48	Pipe Service	1	0.025	6	1.0	0.025
111+50	Pipe Service	1	0.025	6	1.0	0.025
113+92	Pipe Service	6	0.150	6	6.0	0.150
114+65	Pipe Service	2	0.050	6	2.0	0.050
117+75	2	1	0.025	9	1.2	0.031
117+81	6	15.5	0.388	5	14.2	0.354
117+83	4	6.5	0.163	6	6.5	0.163
117+87	4	6	0.150	4	4.9	0.122
117+92	2@6	44	1.100	3	31.1	0.778
117+95	3	4.5	0.113	6	4.5	0.113
122+57	2	1	0.025	6	1.0	0.025
126+83	2	0.5	0.013	6	0.5	0.013
126+90	2	1	0.025	6	1.0	0.025
127+80	3	6.5	0.163	6	6.5	0.163
128+28	6	18.5	0.463	6	18.5	0.463
128+36	4	3	0.075	6	3.0	0.075
128+39	3	5.5	0.138	10	7.1	0.178
128+41	3	5	0.125	9	6.1	0.153
128+46	4	12	0.300	5	11.0	0.274
128+47	2	3	0.075	10	3.9	0.097
128+48	2	2	0.050	11	2.7	0.068
128+49	2	1	0.025	10	1.3	0.032
134+80	Pipe Service	1	0.025	6	1.0	0.025
135+17	2	2	0.050	10	2.6	0.065
135+20	2	1	0.025	8	1.2	0.029
145+21	Pipe Service	1	0.025	6	1.0	0.025
164+74	Pipe Service	2.5	0.063	6	2.5	0.063
164+75	Pipe Service	2	0.050	6	2.0	0.050
164+76	Pipe Service	2	0.050	6	2.0	0.050
164+77	Pipe Service	2	0.050	6	2.0	0.050
167+05	Pipe Service	2	0.050	6	2.0	0.050
167+07	Pipe Service	11	0.275	6	11.0	0.275
167+08	Pipe Service	5	0.125	6	5.0	0.125
Average		3.52	0.09	6.43	3.42	0.09
Total		310.0	7.76		300.9	7.53

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 7

Lower Banvard Extension
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
4+01	Pipe Service	2	0.050	6	2.0	0.050
4+02	Pipe Service	6.5	0.163	6	6.5	0.163
5+70	Pipe Service	2	0.050	6	2.0	0.050
5+77	Pipe Service	1.75	0.044	6	1.8	0.044
5+78	Pipe Service	1.5	0.038	6	1.5	0.038
5+79	Pipe Service	1.25	0.031	6	1.3	0.031
5+80	Pipe Service	1.5	0.038	6	1.5	0.038
5+81	Pipe Service	1.25	0.031	6	1.3	0.031
5+82	Pipe Service	1.5	0.038	6	1.5	0.038
5+83	Pipe Service	1.25	0.031	6	1.3	0.031
5+84	Pipe Service	1.5	0.038	6	1.5	0.038
5+85	Pipe Service	1.25	0.031	6	1.3	0.031
6+38	Pipe Service	2	0.050	6	2.0	0.050
6+39	Pipe Service	2	0.050	6	2.0	0.050
6+40	Pipe Service	4	0.100	6	4.0	0.100
6+43	Pipe Service	5	0.125	6	5.0	0.125
6+45	Pipe Service	23	0.575	6	23.0	0.575
6+46	Pipe Service	2	0.050	6	2.0	0.050
6+47	Pipe Service	1	0.025	6	1.0	0.025
6+48	Pipe Service	1.5	0.038	6	1.5	0.038
Average		3.2	0.08	6.0	3.2	0.08
Total		63.75	1.60		63.75	1.60

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 8

PCWA Middle Banvard Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
2+29	Pipe Service	1	0.025	6.0	1.0	0.025
3+29	Pipe Service	2	0.050	6.0	2.0	0.050
14+41	Pipe Service	5	0.125	6.0	5.0	0.125
		2.7	0.067	6.0	2.7	0.067
Total		8.00	0.20		8.00	0.20

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 9

Middle Fiddler Green Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
12+95	2	2.0	0.050	9	2.5	0.061
12+98	3	3.5	0.088	7	3.8	0.095
13+02	2	1.5	0.038	9	1.8	0.047
13+10	2	1.0	0.025	11	1.4	0.034
13+18	2	Locked		12	Locked	0.000
13+68		Locked			Locked	0.000
14+00	2	1.0	0.025	9	1.2	0.031
18+40	3	1.0	0.025	11	1.4	0.034
19+30	2	0.5	0.013	19	0.9	0.023
24+60	1	2.0	0.050	8	2.3	0.058
24+85	1	1.0	0.025	17	1.7	0.042
28+50	1	1.0	0.025	8	1.2	0.029
28+56	4	3.0	0.075	13	4.4	0.110
28+57	2	2.0	0.050	21	3.7	0.094
28+58	3	2.0	0.050	17	3.4	0.084
42+58	2	1.0	0.025	15	1.6	0.040
43+68	2	1.0	0.025	13	1.5	0.037
45+22	2	1.0	0.025	8	1.2	0.029
45+32	2	1.0	0.025	10	1.3	0.032
46+47	2	1.0	0.025	11	1.4	0.034
46+54	4	Locked			Locked	0.000
49+46	3	Locked			Locked	0.000
49+52	3	2.0	0.050	11	2.7	0.068
49+58	4	1.0	0.025	6	1.0	0.025
49+64	3	5.0	0.125	10	6.5	0.161
49+85	2	2.0	0.050	12	2.8	0.071
49+91	2	1.0	0.025	12	1.4	0.035
49+96	2	1.0	0.025	15	1.6	0.040
50+22	2	0.5	0.013	13	0.7	0.019
50+32	2	1.5	0.038	12	2.1	0.054
52+20	2	Locked		7	Locked	0.000
52+83	2	0.5	0.013	10	0.6	0.017
54+57	2	0.5	0.013	11	0.7	0.018
55+68	2	0.5	0.013	7	0.5	0.014
55+89	S/Plate	3.0	0.075	12	4.2	0.106
55+98	4	10.5	0.263	13	15.5	0.387
56+44		Locked			Locked	0.000
56+44	2	0.5	0.013	15	0.8	0.021
56+65	2	0.5	0.013	6	0.5	0.013
65+50	2-Metered	0.8	0.019	6	0.8	0.019
67+22	2	0.5	0.013	11	0.7	0.018
67+27	2-Metered	0.8	0.019	6	0.8	0.019
67+73	2-Metered	0.8	0.019	6	0.8	0.019
68+50	2	2.0	0.050	11	2.7	0.068
70+34	2	0.5	0.013	14	0.8	0.020
71+06	2-Metered	0.8	0.019	6	0.8	0.019
71+20	2-Metered	0.8	0.019	6	0.8	0.019
71+56	2	1.0	0.025	11	1.4	0.034
71+65	2-Metered	0.8	0.019	6	0.8	0.019

Table 9

Middle Fiddler Green Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
76+58		Locked			Locked	0.000
76+68	2-Metered	0.8	0.019	6	0.8	0.019
76+85	2	3.0	0.075	12	4.2	0.106
77+00	2	0.5	0.013	13	0.7	0.019
77+92	2-Metered	0.8	0.019	6	0.8	0.019
78+58	2	1.0	0.025	15	1.6	0.040
79+36		Locked			Locked	0.000
80+55	2-Metered	0.8	0.019	6	0.8	0.019
82+69	2	1.0	0.025	9	1.2	0.031
85+57	2	3.0	0.075	11	4.1	0.102
85+63	2-Metered	0.8	0.019	6	0.8	0.019
85+84	2-Metered	0.8	0.019	6	0.8	0.019
87+02	2	1.0	0.025	8	1.2	0.029
87+23	2	1.0	0.025	7	1.1	0.027
87+36	4	1.5	0.038	9	1.8	0.047
92+43	Pipe Service	5.0	0.125	6	5.0	0.125
92+69	2-Metered	0.8	0.019	6	0.8	0.019
92+69	2-Metered	0.8	0.019	6	0.8	0.019
92+78	Pipe Service	1.5	0.038	6	1.5	0.038
92+90	Pipe Service	0.5	0.013	6	0.5	0.013
95+00	2-Metered	0.8	0.019	6	0.8	0.019
104+76	Pipe Service	0.5	0.013	6	0.5	0.013
125+34	2	1.0	0.025	6	1.0	0.025
125+39	4	3.5	0.088	3	2.5	0.062
125+67	3	2.0	0.050	5.5	1.8	0.046
135+28	6	12.0	0.300	10	15.5	0.387
137+70	3	0.5	0.013	12	0.7	0.018
166+61	2	1.0	0.025	8	1.2	0.029
176+93	3	4.0	0.100	11	5.4	0.135
187+75	2	1.0	0.025	7	1.1	0.027
190+85	2	1.0	0.025	16	1.6	0.041
191+41	2	1.0	0.025	19	1.8	0.044
193+70	2	1.0	0.025	10	1.3	0.032
193+98	2	1.0	0.025	7	1.1	0.027
198+40	3	3.0	0.075	11	4.1	0.102
198+46	4	2.0	0.050	11	2.7	0.068
198+51	2	1.0	0.025	15	1.6	0.040
198+56	2	1.0	0.025	16	1.6	0.041
Average		1.60	0.040	9.96	2.07	0.047
Total		126.5	3.18		163.5	4.08

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 10

Caperton Canal

August 1999 Operation Summary

Flows in cubic feet per second (cfs)

Date	Inflow to Canal YB168 a	Measured Outflow at Whitney Reservoir b	Treatment Plant output c	Calculated Spill from Res d (b-c)
1	28.0	5.8	5.2	0.6
2	28.0	6.0	5.2	0.8
3	28.0	5.8	5.3	0.6
4	28.0	5.8	5.4	0.4
5	27.8	5.8	5.1	0.7
6	27.8	5.8	4.8	1.0
7	27.8	6.4	5.3	1.1
8	27.4	8.0	5.3	2.7
9	27.4	7.0	5.3	1.8
10	27.4	4.3	5.2	-0.9
11	26.6	3.7	5.1	-1.5
12	28.0	6.4	5.1	1.3
13	28.0	8.1	5.3	2.9
14	27.8	7.0	5.1	1.9
15	27.8	7.3	5.2	2.2
16	27.0	7.2	5.1	2.1
17	26.4	6.4	5.3	1.1
18	26.4	6.0	5.4	0.6
19	26.6	6.0	5.2	0.8
20	27.4	6.6	5.1	1.5
21	27.0	6.9	5.3	1.6
22	27.4	7.0	5.2	1.8
23	27.0	7.0	5.4	1.6
24	27.0	6.9	5.0	1.8
25	27.0	6.7	5.0	1.7
26	27.0	7.2	5.4	1.8
27	27.4	6.9	5.3	1.6
28	27.8	7.2	4.8	2.4
29	27.4	7.0	5.4	1.6
30	27.4	6.9	4.8	2.1
31	27.4	6.9	5.3	1.6
Average	27.4	6.5	5.2	1.3
Total AF	1,687	400	319	81

Table 11

Caperton Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
1+90	2	2	0.050	4	1.6	0.040
3+25	2	1	0.025	11	1.4	0.030
14+20	2	1	0.025	9	1.2	0.030
14+83	2	1	0.025	6	1.0	0.030
16+31	2	1	0.025	7	1.1	0.030
33+58	6	28	0.700	13	41.2	1.030
50+64	3	4	0.100	12	5.7	0.140
77+40	2	1	0.025	8	1.2	0.030
77+43	2	2	0.050	8	2.3	0.060
77+49	2	1	0.025	11	1.4	0.030
77+60	2	1	0.025	13	1.5	0.040
86+61	3	5	0.125	8	5.8	0.140
94+13	2	3	0.075	6	3.0	0.080
103+94&94	2x6	37	0.925	10	47.8	1.190
113+04	6	27	0.675	12	38.2	0.950
113+05&07	2x6	36	0.900	11	48.7	1.220
113+40	4	8	0.200	6	8.0	0.200
154+15	2	3	0.075	5	2.7	0.070
157+09&10	2	9.5	0.238	10	12.3	0.310
157+41	3	1	0.025	11	1.4	0.030
157+56	2	1	0.025	8	1.2	0.030
157+58	2	1	0.025	10	1.3	0.030
157+62	2	3	0.075	8	3.5	0.090
157+82	4	6	0.150	5	5.5	0.140
158+06	2	0.5	0.013	9	0.6	0.020
234+52	2	0.5	0.013	3	0.4	0.010
235+37	Slide plates	75	1.875	7	81.0	2.030
236+43	2	1	0.025	8	1.2	0.030
237+44	4	8	0.200	9	9.8	0.250
237+72	2	1.5	0.038	7	1.6	0.040
237+79	2	1	0.025	6	1.0	0.030
237+89	6	31	0.775	8	35.8	0.900
238+52	2	1.5	0.038	5	1.4	0.030
238+60	2	1	0.025	8	1.2	0.030
266+30	4	8	0.200	8	9.2	0.230
331+13	6	24	0.600	6	24.0	0.600
331+48	6	10	0.250	8	11.6	0.290
331+59	6	18	0.450	6	18.0	0.450
371+40	2	3	0.075	10	3.9	0.100
386+05	4	12	0.300	9	14.7	0.370
417+20	2x6	36.5	0.913	13	53.7	1.340
417+83	6	29	0.725	14	44.3	1.110
417+83	6	3	0.075	11	4.1	0.100
428+40	Slide plates	12	0.300	10	15.5	0.390
444+83	4	3.5	0.088	10	4.5	0.110
446+43	2	1	0.025	10	1.3	0.030
448+93	2 right	1	0.025	6	1.0	0.030

Table 11

Caperton Canal
Pipe Size and Delivery

Station	C.T.O. Size (in.)	PCWA Billed Delivery (M.I.)	(cfs)	Head[1] (in.)	Adjusted Delivery[2] (M.I.)	(cfs)
448+93	2 left	1	0.025	10	1.3	0.030
450+74		5	0.125	12	7.1	0.180
464+40	3	1	0.025	9	1.2	0.030
480+31	2	2	0.050	5	1.8	0.050
480+32	2	1	0.025	6	1.0	0.030
493+82	Slide plates	72	1.800	7	77.8	1.940
497+40&41	Slide plates	59	1.475	7	63.7	1.590
505+26	Spill #10	110	2.750	7	118.8	2.970
516+07	Slide plates	60	1.500	10	77.5	1.940
516+36	2	2	0.050	6	2.0	0.050
Average		11.98	0.34	8.46	16.33	0.37
Total		778.5	19.5		931.0	23.3

[1] Measured by PCWA 08/99

[2] Delivery adjusted for measured head

Table 13

Caperton Canal
July 2000 Operation Summary
Flows in cubic feet per second (cfs)

Date	Inflow to Canal YB168	Deliveries [1] YB168 to YB182	YB 182 Calculated	YB 182 Measured	YB 182 Indicated (Loss) Gain	Deliveries [1] YB182 to YB183A	YB 183A Calculated	YB 183A Measured	YB 183A Indicated (Loss) Gain	Deliveries [1] YB183A to YB183	Deliveries [1] YB183 to End	Caperton at Whitney Reservoir Calculated	Caperton at Whitney Reservoir Measured	YB183A to End Indicated (Loss) Gain	YB168 to End Indicated (Loss) Gain
1	30.2	8.4	21.8	22.0	0.24	4.0	18.0	16.3	(1.74)	0.1	8.5	7.6	7.8	0.17	(1.33)
2	30.5	8.4	22.1	22.2	0.15	4.0	18.2	17.0	(1.24)	0.1	8.5	8.3	8.0	(0.37)	(1.47)
3	30.5	8.4	22.1	21.6	(0.45)	4.0	17.6	16.1	(1.54)	0.1	8.5	7.4	7.7	0.20	(1.79)
4	30.5	8.4	22.1	21.1	(0.95)	4.0	17.1	15.2	(1.94)	0.1	8.5	6.5	7.3	0.79	(2.11)
5	30.6	8.4	22.4	21.2	(1.16)	4.0	17.2	15.3	(1.94)	0.1	8.5	6.6	7.5	0.84	(2.25)
6	31.4	8.4	23.0	22.2	(0.75)	4.0	18.2	17.4	(0.84)	0.1	8.5	8.7	8.1	(0.61)	(2.21)
7	32.0	8.4	23.6	22.8	(0.75)	4.0	18.8	18.3	(0.54)	0.1	8.5	9.6	8.5	(1.19)	(2.48)
8	32.6	8.4	24.4	23.5	(0.85)	4.0	19.5	20.0	0.47	0.1	8.5	11.3	8.9	(2.47)	(2.86)
9	33.1	8.4	24.7	23.9	(0.76)	4.0	19.9	21.0	1.07	0.1	8.5	12.3	9.3	(3.05)	(2.74)
10	31.4	8.4	23.0	22.7	(0.25)	4.0	18.7	18.1	(0.63)	0.1	8.5	9.4	8.5	(0.98)	(1.88)
11	29.7	8.4	21.3	21.5	0.24	4.0	17.5	15.3	(2.24)	0.1	8.5	6.6	7.7	1.01	(0.99)
12	30.5	8.4	22.1	21.8	(0.25)	4.0	17.8	16.1	(1.74)	0.1	8.5	7.4	7.8	0.36	(1.63)
13	30.8	8.4	22.4	22.0	(0.36)	4.0	18.0	15.3	(2.74)	0.1	8.5	6.6	8.3	1.62	(1.48)
14	30.2	8.4	21.8	20.8	(0.96)	4.0	16.8	15.0	(1.84)	0.1	8.5	6.3	7.3	0.96	(1.81)
15	29.7	8.4	21.3	20.8	(0.46)	4.0	16.8	14.6	(2.24)	0.1	8.5	5.9	7.3	1.39	(1.31)
16	28.3	8.4	19.9	20.4	0.54	4.0	16.4	13.9	(2.54)	0.1	8.5	5.2	7.0	1.78	(0.22)
17	29.7	8.4	21.3	21.2	(0.06)	4.0	17.2	15.5	(1.74)	0.1	8.5	6.8	8.6	1.79	(0.00)
18	30.8	8.4	22.4	22.6	0.24	4.0	18.6	18.5	(0.14)	0.1	8.5	9.8	9.1	(0.71)	(0.61)
19	29.1	8.4	20.7	21.4	0.74	4.0	17.4	16.3	(1.14)	0.1	8.5	7.6	8.1	0.49	0.09
20	28.0	8.4	19.6	19.3	(0.25)	4.0	15.3	12.0	(3.34)	0.1	8.5	3.3	6.6	3.22	(0.38)
21	29.4	8.4	21.0	20.4	(0.56)	4.0	16.4	13.7	(2.74)	0.1	8.5	5.0	6.7	1.67	(1.63)
22	29.1	8.4	20.7	20.2	(0.46)	4.0	16.2	13.4	(2.84)	0.1	8.5	4.7	6.7	1.97	(1.33)
23	29.4	8.4	21.0	20.9	(0.05)	4.0	16.9	14.6	(2.34)	0.1	8.5	5.9	7.0	1.08	(1.32)
24	29.1	8.4	20.7	20.3	(0.36)	4.0	16.3	14.1	(2.24)	0.1	8.5	5.4	6.9	1.42	(1.18)
25	29.1	8.4	20.7	20.5	(0.16)	4.0	16.5	14.2	(2.34)	0.1	8.5	5.5	6.9	1.32	(1.18)
26	29.4	8.4	21.0	20.5	(0.45)	4.0	16.5	14.4	(2.14)	0.1	8.5	5.7	7.0	1.28	(1.32)
27	30.2	8.4	21.8	21.5	(0.26)	4.0	17.5	16.3	(1.24)	0.1	8.5	7.6	7.5	(0.15)	(1.65)
28	30.0	8.4	21.6	21.1	(0.45)	4.0	17.1	15.7	(1.44)	0.1	8.5	7.0	7.5	0.45	(1.45)
29	31.4	8.4	23.0	22.0	(0.95)	4.0	18.0	17.4	(0.64)	0.1	8.5	8.7	8.0	(0.77)	(2.37)
30	31.7	8.4	23.3	22.2	(1.06)	4.0	18.2	17.6	(0.63)	0.1	8.5	8.9	8.1	(0.82)	(2.51)
31	30.0	8.4	21.6	21.1	(0.45)	4.0	17.1	15.9	(1.24)	0.1	8.5	7.2	7.8	0.56	(1.13)
Average	30.3	8.44	21.8	21.5	(0.36)	3.97	17.5	16.0	(1.56)	0.14	8.52	7.30	7.72	0.43	(1.50)
Toatl AF	1862	519	1343	1320	(22.42)	244	1077	981	(96)	8	524	449	475	26	(92)

[1] Deliveries calculated assuming measured head and 50% Usage Time for customers purchasing less than 24 miners-inches and 100% time of use for customers purchasing 24 miners-inches or more)

FIGURES

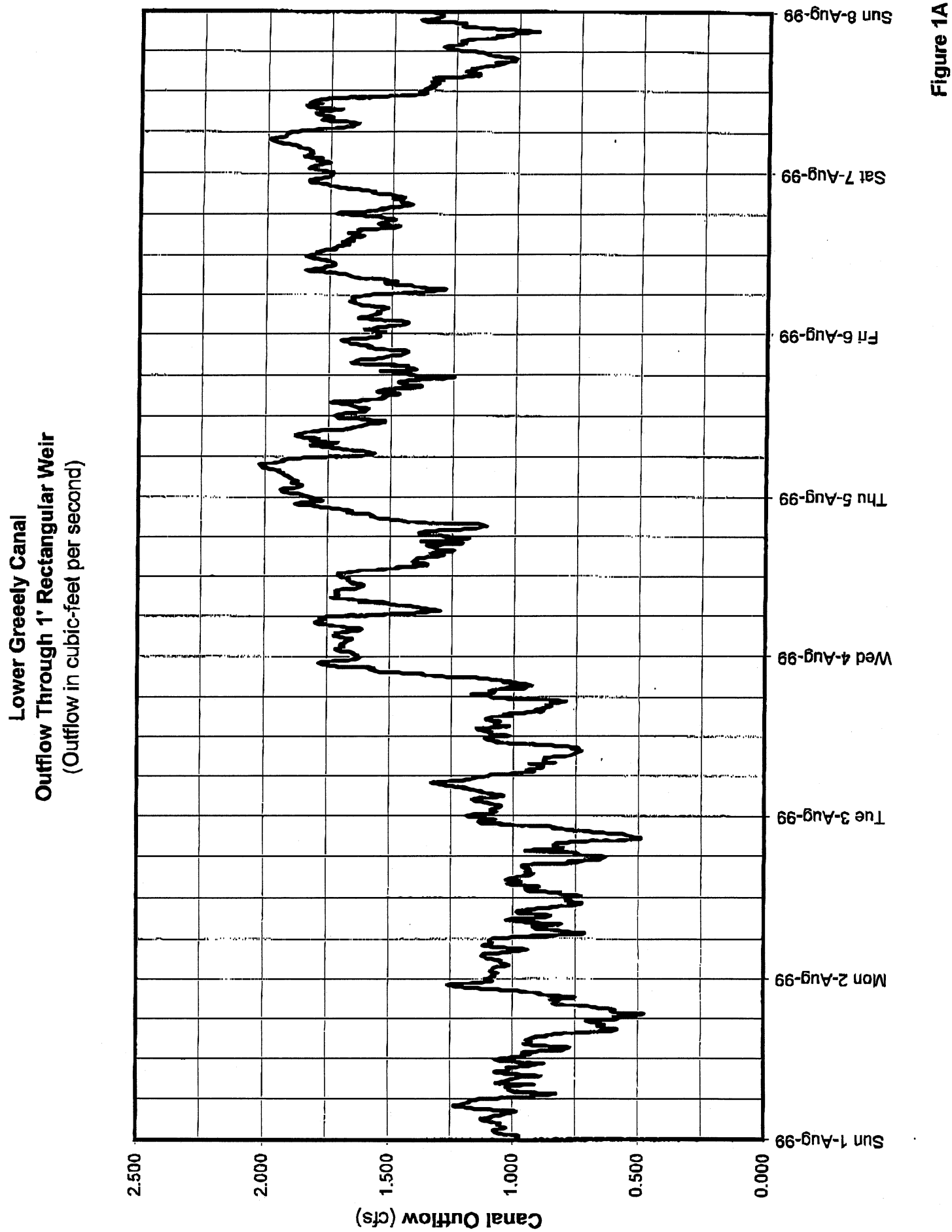

Lower Greeely Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun 1-Aug-99
Mon 2-Aug-99
Tue 3-Aug-99
Wed 4-Aug-99
Thu 5-Aug-99
Fri 6-Aug-99
Sat 7-Aug-99
Sun 8-Aug-99

Figure 1A

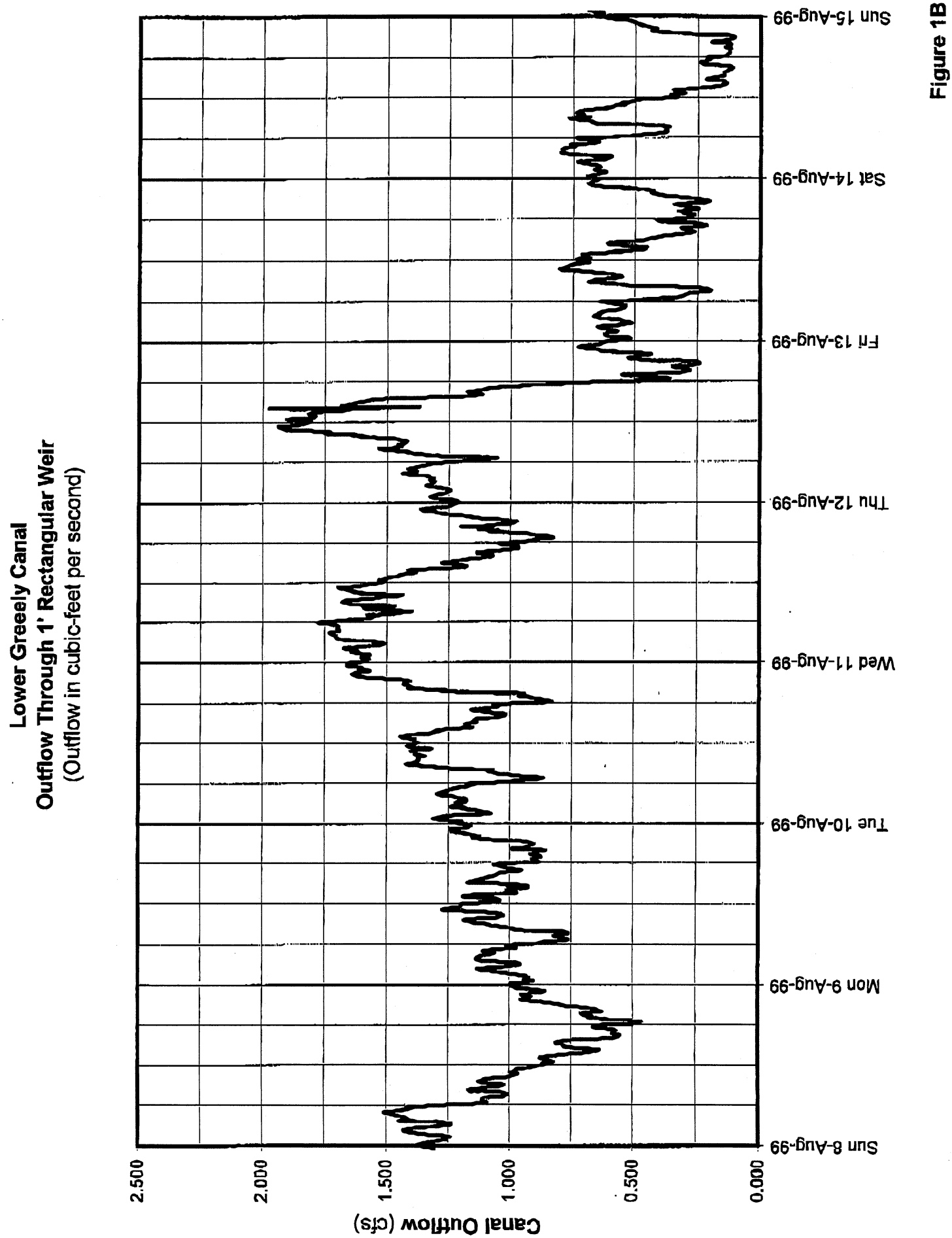

Lower Greeely Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun 8-Aug-99
Mon 9-Aug-99
Tue 10-Aug-99
Wed 11-Aug-99
Thu 12-Aug-99
Fri 13-Aug-99
Sat 14-Aug-99
Sun 15-Aug-99

Figure 1B

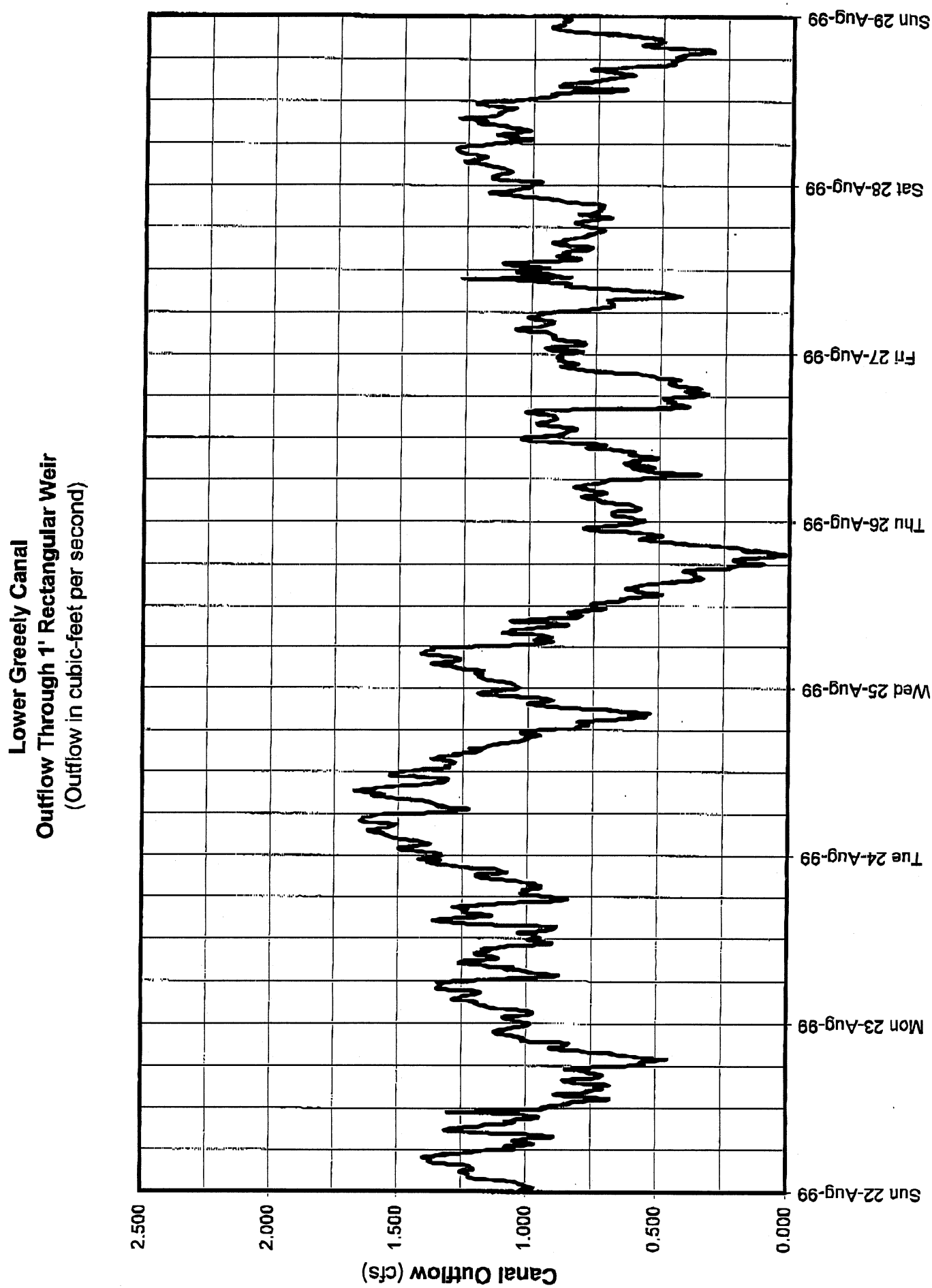

Lower Greeely Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun 22-Aug-99
Mon 23-Aug-99
Tue 24-Aug-99
Wed 25-Aug-99
Thu 26-Aug-99
Fri 27-Aug-99
Sat 28-Aug-99
Sun 29-Aug-99

Figure 1D

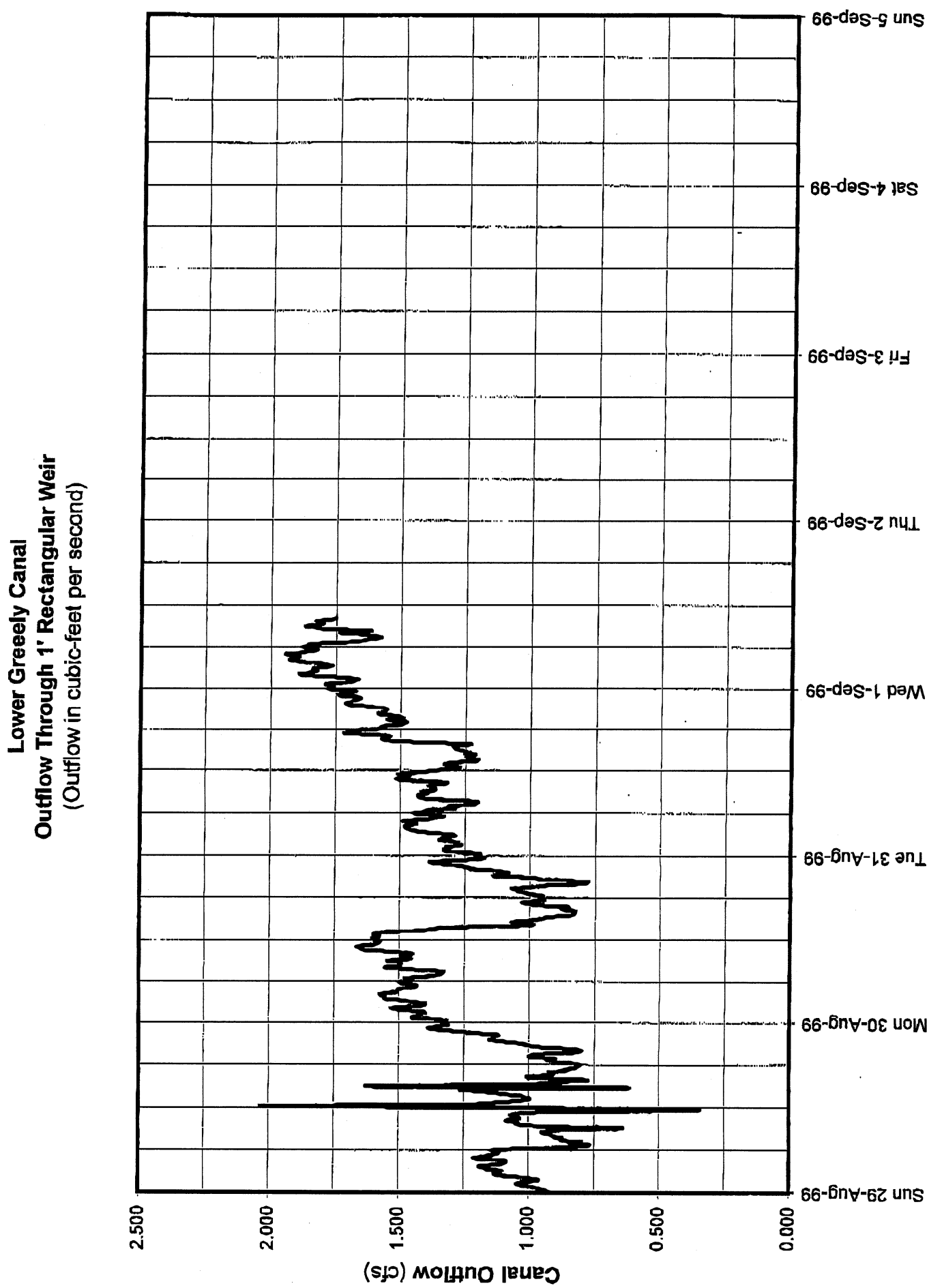

Lower Greeely Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun 29-Aug-99
Mon 30-Aug-99
Tue 31-Aug-99
Wed 1-Sep-99
Thu 2-Sep-99
Fri 3-Sep-99
Sat 4-Sep-99
Sun 5-Sep-99

Figure 1E

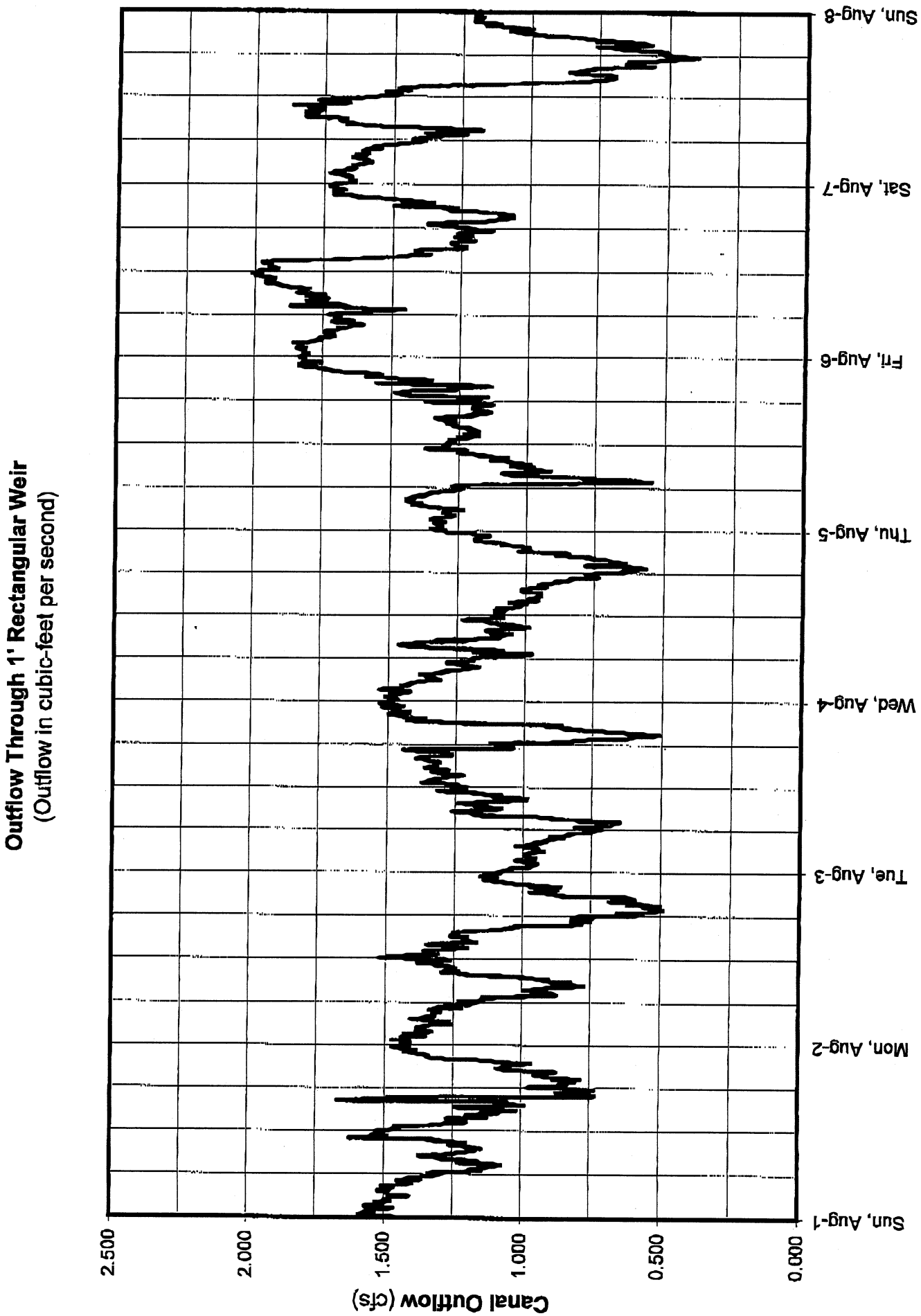

Lower Banvard Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun, Aug-1
Mon, Aug-2
Tue, Aug-3
Wed, Aug-4
Thu, Aug-5
Fri, Aug-6
Sat, Aug-7
Sun, Aug-8

Figure 2A

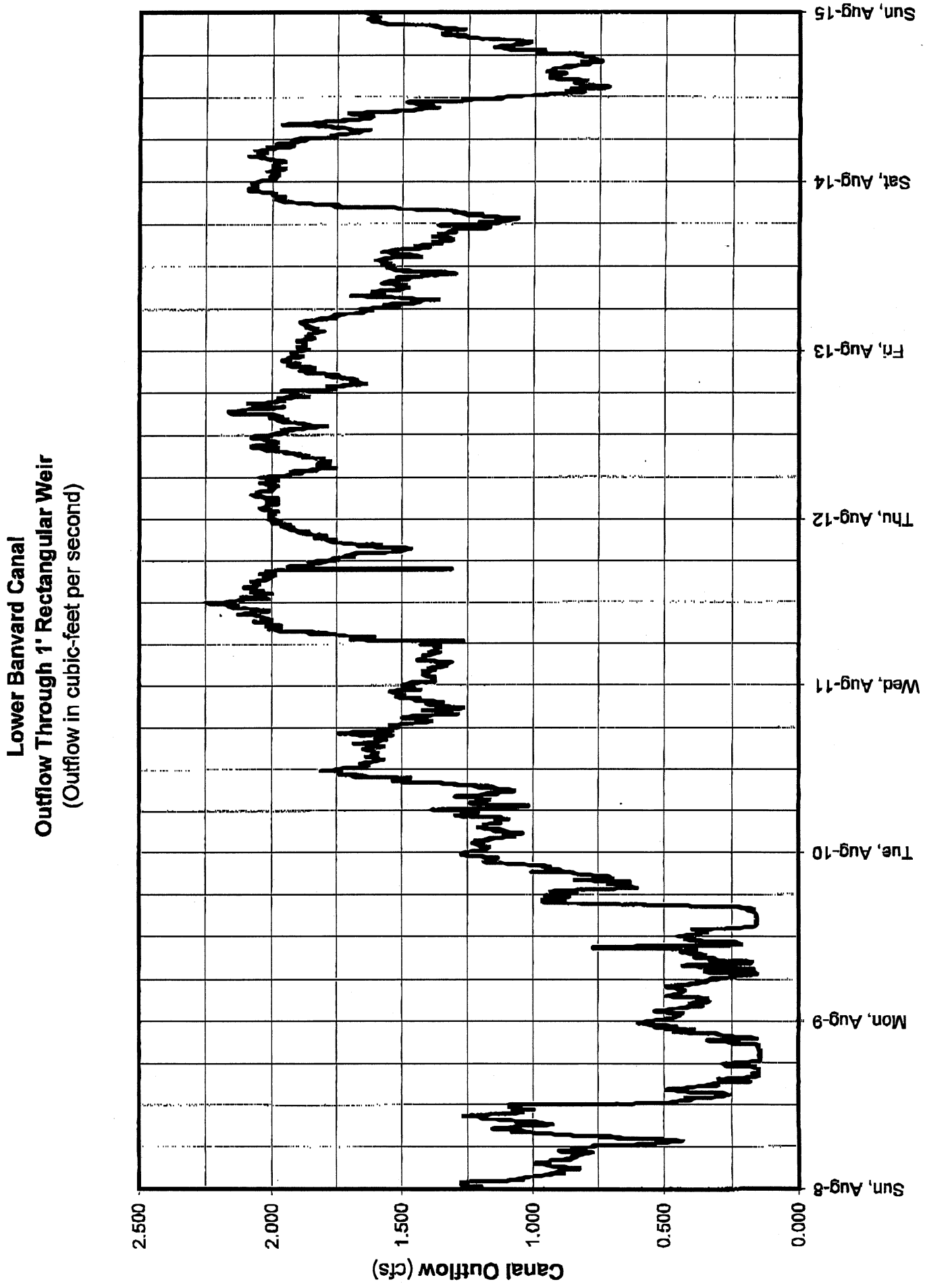

Lower Banvard Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun, Aug-8
Mon, Aug-9
Tue, Aug-10
Wed, Aug-11
Thu, Aug-12
Fri, Aug-13
Sat, Aug-14
Sun, Aug-15

Figure 2B

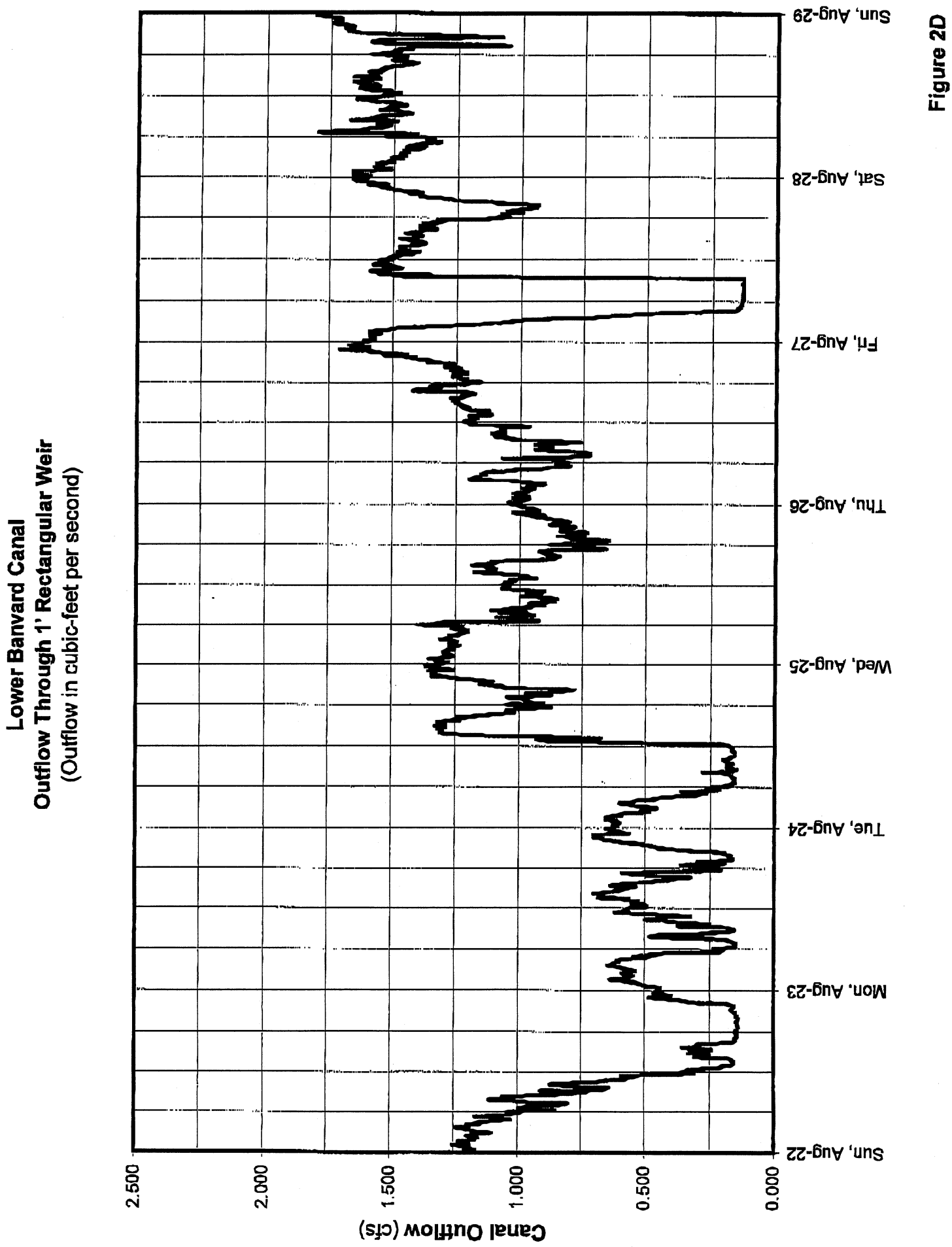

Lower Banvard Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun, Aug-22
Mon, Aug-23
Tue, Aug-24
Wed, Aug-25
Thu, Aug-26
Fri, Aug-27
Sat, Aug-28
Sun, Aug-29

Figure 2D

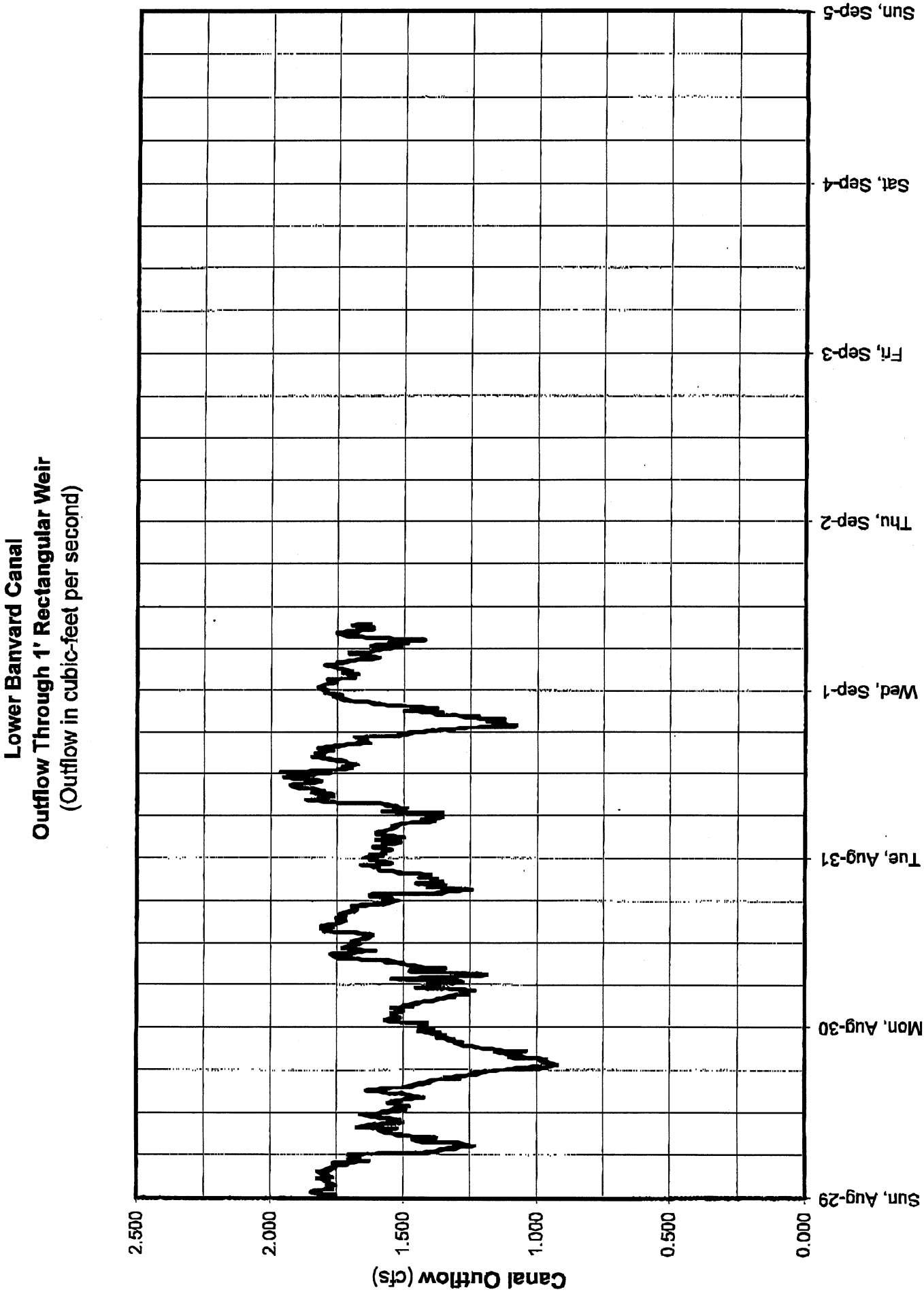

Lower Banvard Canal
Outflow Through 1' Rectangular Weir
(Outflow in cubic-feet per second)
Canal Outflow (cfs)
2.500
2.000
1.500
1.000
0.500
0.000
Sun, Aug-29
Mon, Aug-30
Tue, Aug-31
Wed, Sep-1
Thu, Sep-2
Fri, Sep-3
Sat, Sep-4
Sun, Sep-5

Figure 2E

APPENDIX G

Department of Water Resources Water Conservation Study, 2000

1502-2A

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

RECEIVED
MAR 01 2000
Placer County Water Agency

Mr. David Breninger
General Manager
Placer County Water Agency
114 Ferguson Road
Post Office Box 6570
Auburn, California 95604

Dear Mr. Breninger:

Enclosed is the final water conservation study for the Placer County Water Agency prepared by the Department of Water Resources. As requested, emphasis was focused on PCWA Zone 1.

The enclosed material provides graphics and text describing water distribution patterns by PCWA customer categories, various best-management practices for water conservation, some suggestions for water efficiency programs, references to evaluate the cost effectiveness of water efficiency practices, and funding sources for water conservation.

We would be pleased to meet with you, PCWA staff, and board members to discuss the contents of the report. Until then, if you have any questions or would like more information, please contact me at (916) 327-1649, or by e-mail at cpike@water.ca.gov.

Sincerely,

Charles W. Pike, Program Manager
Industrial Water Management
Division of Planning and Local Assistance

Enclosur

TO	DATE	INFO.	ACTION
GNL. MGR.	3/1		
ATTORNEY			
BRD. CLK.			
DIRECTORS			
DEPT. HEADS			
MGT. TEAM			
CUST. SERV. DIR.	3/1	X	
FIELD SERV. DIR.	3/1	X	
FIN. SERV. DIR.	3/1	X	
H/R DIR.	3/1	X	
PL/MK DIR.	3/1	X	
PWR. SYS. MGR.			
TECH. SERV. DIR.	3/1	X	

Potential Water Efficiency Programs
for
Placer County Water Agency

Prepared by
Water Use Efficiency Office
California Department of Water Resources

Introduction

At their August 30, 1999 meeting, the Placer County Water Agency Board of Directors Subcommittee for Water Conservation requested assistance from the Department of Water Resources to assess water efficiency opportunities for PCWA Zone 1. In response to that request, the Water Use Efficiency Office of the California Department of Water Resources provided a November 1999 draft report to PCWA. This revision is provided to the PCWA General Manager.

The purpose of this document is to provide a preliminary identification of potential water efficiency alternatives available to PCWA.

Enclosed are:

- A review of 1998 water use quantities for PCWA Zone 1 for 1998.
- An overview of water efficiency practices as required by various California entities
- Suggested Water Efficiency Practices for PCWA
- Preliminary format to evaluate selective programs
- Selective case studies of water efficiency programs
- Potential Funding Sources for Water Efficiency Programs

Following consideration of the alternatives described here, PCWA should fund and implement programs that will: 1) assure a continued supply of high quality water at reasonable prices to the PCWA service area; 2) comply with new regulations and institutional requirements regarding efficient water use, and 3) provide PCWA with operational flexibility in the rapidly changing California water scene.

ZONE 1 Water Use

Water production and use data provided by PCWA staff for Zone 1 is displayed as a series of figures.

Figure 1. ***PCWA Total Water Use*** compares water deliveries for 1995 through 1998:

- total volume to the PCWA system,
- total raw water into Zone 1, and the
- treated water production for Zone 1. Note that treated water uses about 33 percent of Zone 1 raw water. This portion is growing.

Figure 2. ***PCWA Zone 1 Treated Water Production*** displays the monthly amounts of water produced for the calendar years 1994 through 1998. The peak water use has grown to about 3,200 acre feet per month for both of the last two years although 1997 had an extremely dry spring and 1998 had a very rainy spring. The peaks reflect growing summer irrigation consumption. The 1997 spring water use resembles drought conditions, reflecting increased customer demand during droughts instead of curtailments.

Figure 3. ***1998 PCWA Zone 1 Treated Water Distribution*** compares the consumption by treated water customer categories. If the data were available, a graphic analysis like Figure 2 comparing bimonthly or seasonal use of these categories would help to target customer categories for landscape irrigation management programs.

Figure 4. ***Zone 1 Treated Water Use*** is a pie chart showing percents of the same consumption as Figure 3. The three largest use categories are: 1) residential (47%), 2) commercial, industrial, and institutional which are the combined Commercial, Municipal and Industrial users (total of 19%), and 3) unaccounted-for-water (16%). UAW is water unregistered by slow meters, unmeasured uses (fire suppression, theft, street sweeping, etc.), losses from relief valves or tanks, and leaks from the distribution system. UAW of 16 percent deserves attention.

Figure 5. ***Water Use Inside the Home*** details the different water uses inside a typical single family residence as identified by the American Water Works Association Research Foundation. The largest water uses are toilets (27%), clothes washers (22%), shower (17%), faucets (16%), and leaks(14%). These large water consumption figures strongly support the focus of existing California and federal water efficiency laws on plumbing fixtures.

Figure 6. ***Placer County Water Agency Customer Categories and Types of Water Use*** depict the water uses typically employed by PCWA customer billing categories. The same water uses are extended across several customer categories. Landscape irrigation is employed by all categories.

Figure 1

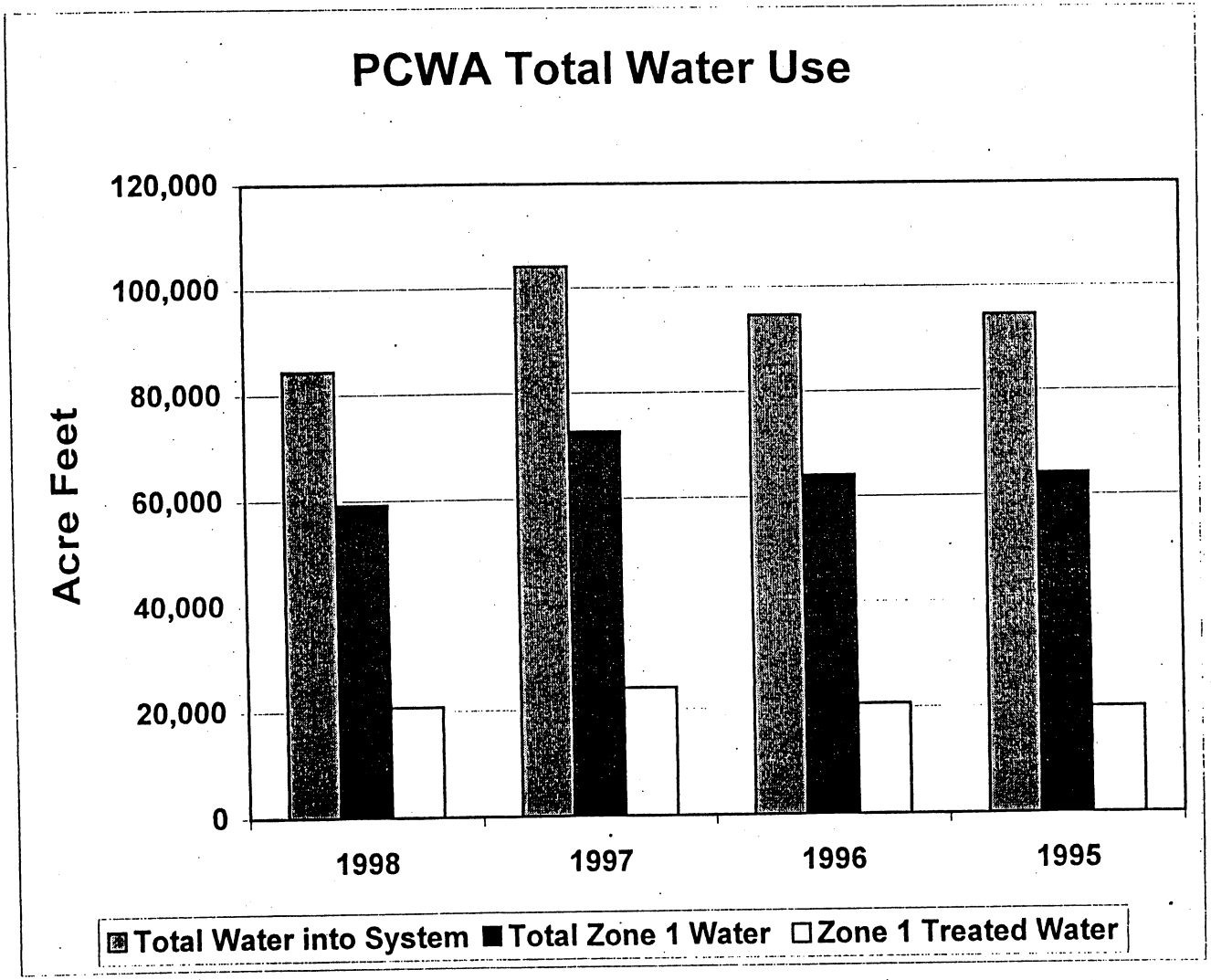

PCWA Total Water Use
Acre Feet
120,000
100,000
80,000
60,000
40,000
20,000
0
1998
1997
1996
1995
Total Water into System
Total Zone 1 Water
Zone 1 Treated Water

Figure 2

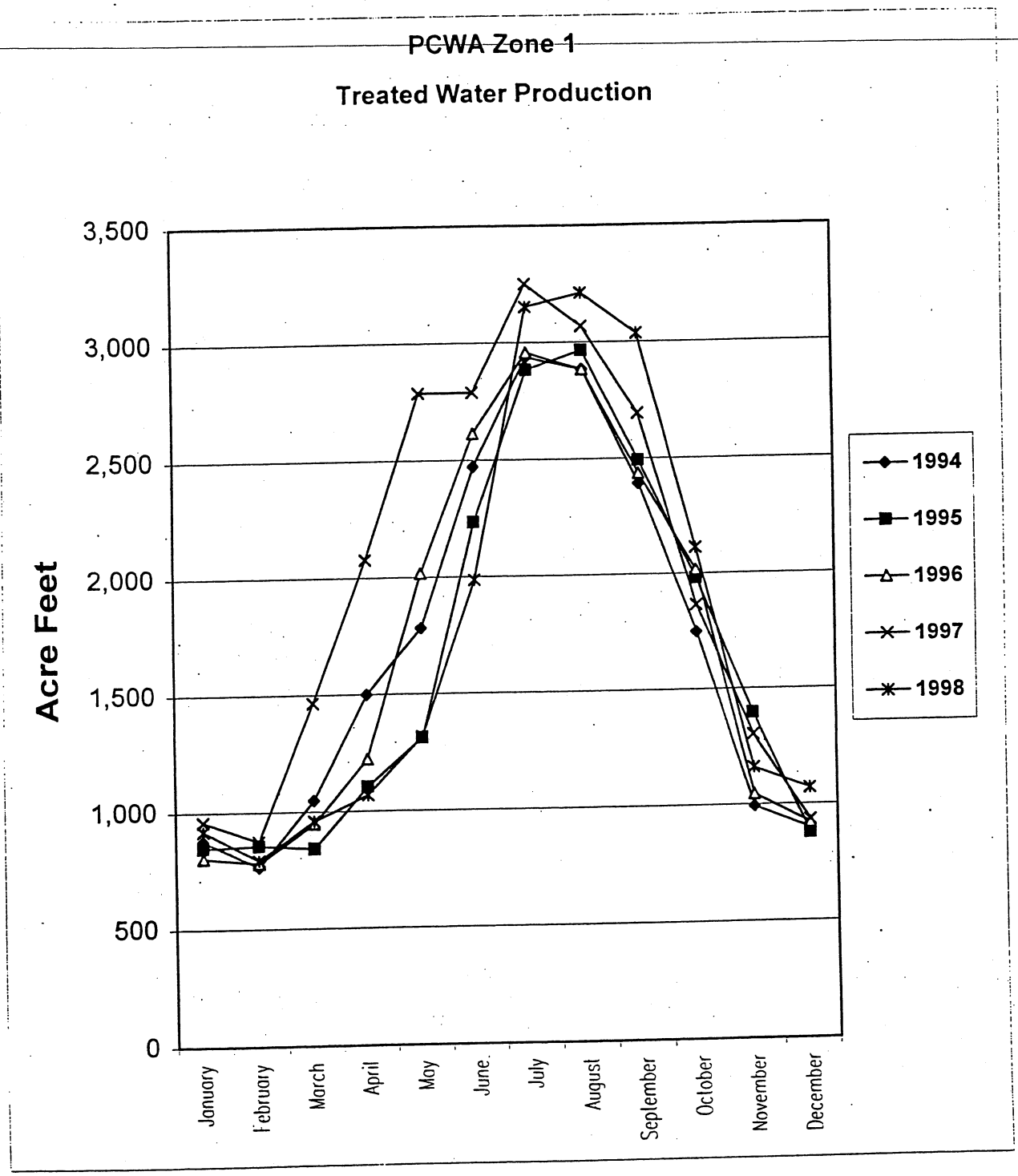

PCWA Zone 1
Treated Water Production
Acre Feet
3,500
3,000
2,500
2,000
1,500
1,000
500
0
January
February
March
April
May
June
July
August
September
October
November
December
1994
1995
1996
1997
1998

Figure 5

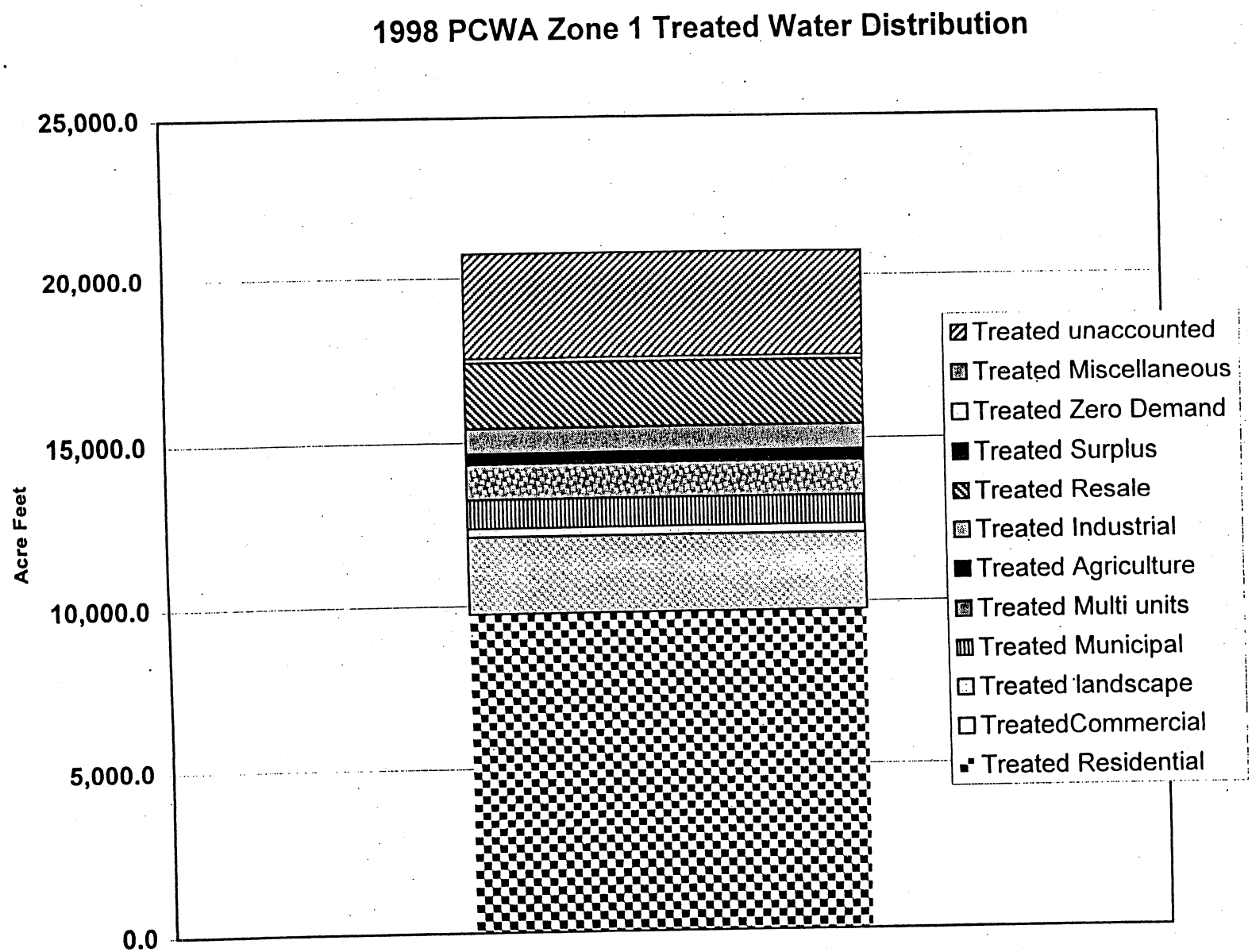
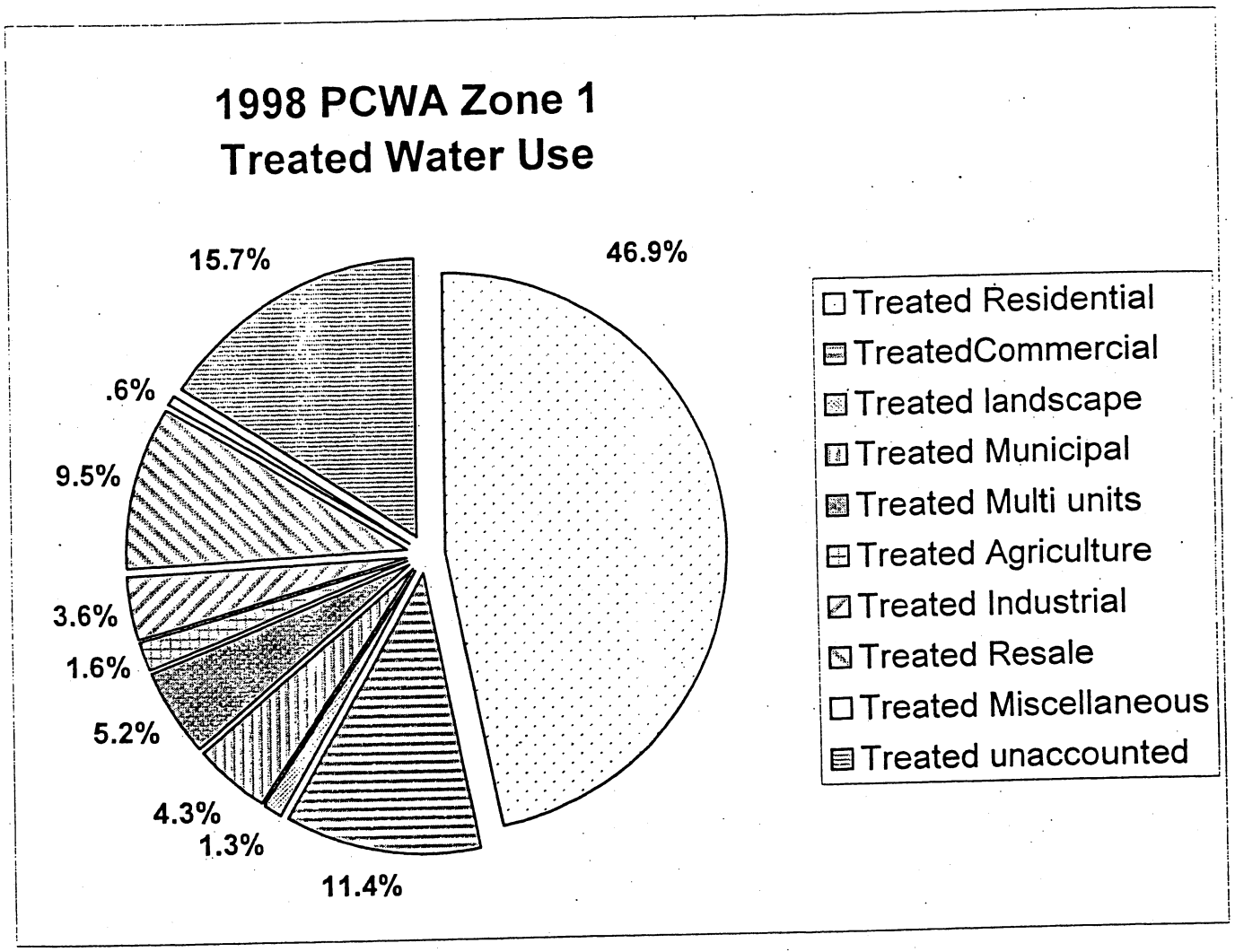
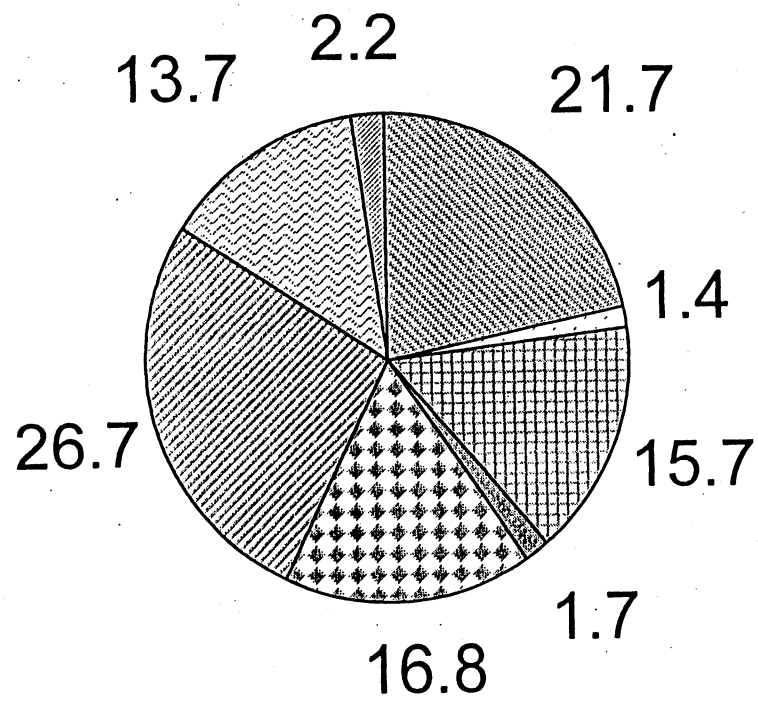

1998 PCWA Zone 1 Treated Water Distribution
25,000.0
20,000.0
15,000.0
10,000.0
5,000.0
0.0
Acre Feet
Treated unaccounted
Treated Miscellaneous
Treated Zero Demand
Treated Surplus
Treated Resale
Treated Industrial
Treated Agriculture
Treated Multi units
Treated Municipal
Treated landscape
TreatedCommercial
Treated Residential

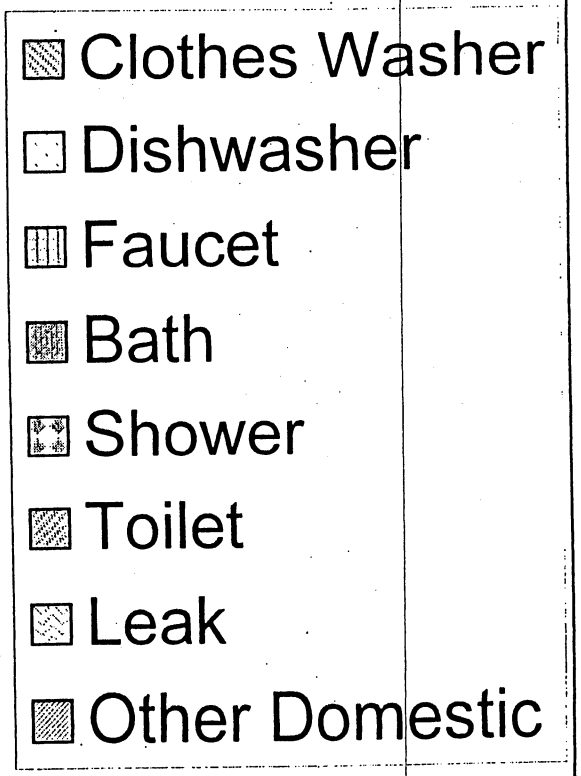
Figure 4


1998 PCWA Zone 1
Treated Water Use
15.7%
46.9%
.6%
9.5%
3.6%
1.6%
5.2%
4.3%
1.3%
11.4%
Treated Residential
TreatedCommercial
Treated landscape
Treated Municipal
Treated Multi units
Treated Agriculture
Treated Industrial
Treated Resale
Treated Miscellaneous
Treated unaccounted

Figure

Indoor per Capita Water Use Percent by Fixture





Source: AWWARF, Residential End Uses of Water, 1999

Figur

Placer County Water Agency Customer Categories and Types of Water Use

	Metered Treated Water Customers											Raw Water Customers									
	Treated Water Residential single family	Treated Water Commercial businesses <10,000 per month	Treated Water Landscapes	Treated Water Municipal	Treated Water Multi units	Treated Water Agriculture	Treated Water Industrial >10,00CCF per month	Treated Water Resale to other utilities	Treated Water Surplus	Treated Water Zero Demand	Treated Water Miscellaneous	Subtotal Treated Water Customers	Raw Water Metered	Raw Water Commercial Ag	Raw water Conditional	Raw Water yearly	Raw Water Seasonal	Raw Water Landscape	Raw Water Resale	Raw Water Surplus	Raw Water Miscellaneous	Subtotal Raw Water Customers
1998 number of accounts	21,169	1,279	90	206	466	101	10	5	1	1,365	529	25,221	99	278	70	2,829	1,433	15	1	17	112	3,851
1998 total treated water use - AF	9,739	366	260	901	1,071	336	748	1,969	8	3	129	15,530	Unmetered Raw Water Requested by Customers - Acre Feet per Year									
													175	19	109	38,656	15,657	4,189	421	6,867	1	66,093
Types of Water Use																						
Interior																						
toilets	x	x		x	x		x	x					x									
showers	x	x		x	x		x	x														
faucets	x	x		x	x		x	x														
clothes washers	x				x			x														
leaks	x	x	x	x	x	x	x	x														
baths	x				x			x														
dishwashers	x	x		x	x			x														
other domestic	x				x			x														
spa /hot tubs	x	x		x	x		x	x														
evaporative cooling		x		x			x	x														
one pass cooling		x		x			x	x														
boilers		x		x			x	x														
process		x		x			x	x														
washing & sanitation		x		x			x	x														
laundry machines		x		x			x	x														
kitchen		x		x			x	x														
water treatment		x		x			x	x														
process		x		x			x	x														
other		x		x			x	x														
Exterior																						
landscape irrigation	x	x	x	x	x	x	x	x					x	x	x	x	x	x				
aesthetic fountains	x	x	x	x	x		x	x							x	x	x	x				
swimming pools	x	x		x	x		x	x														
crop irrigation						x								x	x	x	x			x		
livestock watering						x								x	x	x	x					
Types of Water uses.xls	PCWA Rate types vs. uses 9/28/99																					

Demand Management Programs

During the past two decades, progressive energy utilities achieved some success in changing energy use patterns, instead of solely meeting rising demand with new sources. More recently water utilities in many states have participated in national market transformation programs to change water use (demand) characteristics to lessen the growing demands on available and future water supplies. Types of demand changes include: reduce seasonal demand peaks; shift time of use to reduce the daily peaks; reduce system losses so that more water gets to the customers; and improve customer water efficiency inside and outside their residence and workplace to delay capital costs for plant expansion.

Many demand management practices replace old inefficient fixtures, processes, and equipment with new more efficient models. This practice began with energy efficiency programs in the 1970s and continues today with energy and water efficiency goals.

With prospects for high growth in the service area, PCWA has a grand opportunity to get ahead of the demand curve by motivating new developers to install the most water efficient equipment, processes, and landscape designs available. The effect will be to reduce per capita water demand, reduce future customer water and wastewater bills, flatten peak water demand growth, and reduce wastewater treatment demand. By implementing forward looking demand altering strategies during the coming growth decades, PCWA can de-emphasize catch up efforts and enjoy the results of the efficiency measures installed during the early growth phases.

Some demand management programs are better suited for short term situations, such as distribution system failures or water contamination. Effective short term programs typically ask the customer to change their lifestyle or water use patterns for days or months. Examples include requiring customers to curtail all irrigation and to restrict indoor water use.

Long term demand management programs usually reduce long term water use through hardware changes and market transformations, i.e., installing ultra low flush toilets, recirculating hot water systems, high efficiency clothes washers, elimination of single pass cooling, and landscape water budgets.

Motivators for Demand Management Programs

A number of influences (also called motivators or drivers) prompt demand management programs. PCWA should examine how existing and future drivers will effect PCWA's water supply, PCWA customers, the regional infrastructure, the institutions affecting PCWA, and the changing California water environment. Then PCWA should base their demand management decisions accordingly. Some examples are:

- Reduce volume of water consumption to meet existing water supply limits.
  Example: East Bay Municipal Utility District

- Reduce volume of water consumption to avoid using water supplies with higher costs. A potential example: PCWA
- Reduce volume of water consumption to avoid using water supplies with poorer water quality. Example: Fresno
- Delay capital cost for plant expansion. A potential example: PCWA.
- Reduce volume of wastewater effluent to meet regulatory constraints. Examples: Los Angeles and San Jose.
- Reduce volume of wastewater discharge to meet treatment plant capacity. Examples: Santa Monica and Santa Rosa.
- Implement efficiency measures to conform with institutional rules so the local agency can sell surplus water in an interagency water market; or participate in other state or regional programs. Examples: Sacramento Water Forum, U.S.B.R. CVPIA, and Cal Fed
- Drought or emergency water supply constraints (contamination due to toxic spills, contamination due to treatment plant failure, canal system failure, or loss of electricity due to widespread earthquake damage or wildfire). Examples: required in DWR Water Management Plans, experienced by California water agencies in 1976-77 and 1987-1992 droughts, EBMUD in 1987 fire, Los Angeles in Northridge earthquake.

Types of Water Efficiency Practices

Since 1991, when the California Urban Water Conservation Council was founded, Best Management Practices for Urban Water Conservation have been practiced by many California water agencies. Although they were first developed in preparation for Bay-Delta proceedings with the State Water Resources Control Board, the BMPs have since been required by several government programs. Those relevant to PCWA are the Sacramento Water Forum, the U. S. Bureau of Reclamation implementation of the Central Valley Project Improvement Act, the CalFed Process, and the Department of Water Resources Water Management Plans.

The BMPs of the Sacramento Water Forum, U.S.B.R., and the CUWCC are arrayed in Figure 7 "Best Management Practices Applicable to PCWA Customer Categories." This figure shows which BMPs apply to which PCWA customer categories. It depicts that many BMPs are applicable to both treated and raw water customers.

Note that the PCWA category for "industrial customers" is defined differently than the CUWCC BMP #9.

> BMP #9 defines commercial, industrial, and institutional customers. Commercial customers are any water user that provides or distributes a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce. Industrial customers are any water users that are primarily manufacturers or processors of materials as defined by the Standard Industrial Classifications (SIC) Code numbers 2000 through 3999. Institutional is any

Figure 1
Best Management Practices Applicable to PCWA Customer Categories

	Placer County Water Agency Customer Categories and Types of Water Use																					
	Treated Water Residential single family	Treated Water Commercial businesses <10,000 CCF per month	Treated Water Landscapes	Treated Water Municipal	Treated Water Multi units	Treated Water Agriculture	Treated Water Industrial >10,000CCF per month	Treated Water Resale to other utilities	Treated Water Surplus	Treated Water Zero Demand	Treated Water Miscellaneous	Pressurized Distribution System	Raw Water Metered	Raw Water Commercial Ag	Raw water Conditional	Raw Water yearly	Raw Water Seasonal	Raw Water Landscape	Raw Water Resale	Raw Water Surplus	Raw Water Miscellaneous	PCWA Raw Water Distribution System
California Urban Water Conservation Council Best Management Practices for Urban water Conservation																						
BMP 1 WATER SURVEY PROGRAMS FOR SINGLE-FAMILY RESIDENTIAL AND MULTI-FAMILY RESIDENTIAL CUSTOMERS	X				X			X					X			X	X					
BMP 2 RESIDENTIAL PLUMBING RETROFIT constructed prior to 1992	X				X			X					X			X	X					
BMP 3 SYSTEM WATER AUDITS, LEAK DETECTION AND REPAIR								X				X										X
BMP 4 METERING WITH COMMODITY RATES FOR ALL NEW CONNECTIONS AND RETROFIT OF EXISTING CONNECTIONS	done	done	done	done	done	done	done	X	done	done	done		done	X	X	X	X	X	X	X	X	
BMP 5 LARGE LANDSCAPE CONSERVATION PROGRAMS AND INCENTIVES for CII customers, could also be used with raw water customers		X	X	X			X	X					X5			X5	X5	X				
BMP 6 HIGH-EFFICIENCY WASHING MACHINE REBATE PROGRAMS	X				X			X														
BMP 7 PUBLIC INFORMATION PROGRAMS	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	
BMP 8 SCHOOL EDUCATION PROGRAMS to promote water conservation and water conservation related benefits.				X				X														
BMP 9 CONSERVATION PROGRAMS FOR COMMERCIAL, INDUSTRIAL, AND INSTITUTIONAL ACCOUNTS		X		X			X	X										X				
BMP 10 WHOLESALE AGENCY ASSISTANCE PROGRAMS to Retail agencies to implement all BMPs								X														
BMP 11 CONSERVATION PRICING	done	done	done	done	done	done	done	done	done		done		X	X	X	X	X	X	X	X	X	
BMP 12 CONSERVATION COORDINATOR for oversight of conservation programs and BMP implementation	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	
BMP 13 WATER WASTE PROHIBITION AGAINST gutter flooding, single pass cooling systems in new connections, non-recirculating systems in all new conveyer car wash and commercial laundry systems, and non-recycling decorative water fountains.	X	X	X	X	X	X	X	X	X		X		X	X	X	X	X	X		X	X	
BMP 14 RESIDENTIAL ULFT REPLACEMENT PROGRAMS (construction prior to 1992)	X				X			X														

Key to Notation

"done" indicates that PCWA appears to have complied with this BMP for the given customer categories
"X" indicates that the BMP applies to the customer category
"X5" indicates that large landscape irrigation programs may apply
A blank cell indicates that the BMP appears not to apply to the category, except for CVPIA AG BMPs which are not rated.

Figure 7
Best Management Practices Applicable to PCWA Customer Categories

	Placer County Water Agency Customer Categories and Types of Water Use																							
Sacramento Water Forum	Treated Water Residential single family	Treated Water Commercial businesses <10,000 CCF per month	Treated Water Landscapes	Treated Water Municipal	Treated Water Multi units	Treated Water Agriculture	Treated Water Industrial >10,000CCF per month	Treated Water Resale to other utilities	Treated Water Surplus	Treated Water Zero Demand	Treated Water Miscellaneous	Pressurized Distribution System	Raw Water Metered	Raw Water Commercial Ag	Raw water Conditional	Raw Water yearly	Raw Water Seasonal	Raw Water Landscape	Raw Water Resale	Raw Water Surplus	Raw Water Miscellaneous	PCWA Raw Water Distribution System	
1. Residential METER RETROFIT BMP 4 and volumetric metering & conservation pricing BMP 11	done	done		done	done																		
2.NON-RESIDENTIAL METER RETROFIT (85-90% within 10 years) BMP 4		done	done	done		done	done	done	done		done		done	X	X	X	X	X		X	X		
3. RESIDENTIAL ULFT replacement program BMP 14	X				X																		
4. NON-RESIDENTIAL TOILETS BMP 9		X		X			X																
5. Implement all other CUWCC BMPs within 3 years ;	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	
6. CITIZEN INVOLVEMENT -public participation process	X	X	X	X	X	X	X		X	X	X		X	X	X	X	X	X	X	X	X		
7. WATER CONSERVATION PLANS to be included in final recommendation: implementation schedule, target customers, budget, water use projections, per capita water use projections, citizen involvement	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		
8. ANNUAL REPORTS on implementation activities																							
9. UPDATE CONSERVATION PLANS	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X		
Central Valley Project Improvement Act																							
BMPs for URBAN CONTRACTORS - Revised to be identical with CUWCC BMPs - requires metering all customers with commodity rates	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
"Critical" BMPs for AG Contractors																							
1. MEASURE WATER DELIVERIES to customer within 6 % accuracy						done							done	X	X	X	X	X	X	X	X	X	
2. WATER CONSERVATION COORDINATOR	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		
3. SERVICES for AG WATER USERS						X							X	X	X	X	X	X	X	X	X		
4. PRICING STRUCTURE BMP#11						done							done	X									
5. EVALUATE POLICIES OF WATER SUPPLER														X								X	
6. IMPROVE PUMP EFFICIENCIES																							
"Exemptible BMPs for AG Contractors																							
1. Facilitate Alternative Land Use																							
2. Use Recycled Water where Available																							
3. Facilitate financing for on-farm irrigation systems																							
4. Incentive Pricing																							
5. Line or Pipe ditches or canals and construct regulatory reservoirs																							
6. Increase flexibility of water ordering																							
7. Operate spill and tailwater recovery systems																							
8. Optimize conjunctive use of surface and ground water																							
9 Automate canal structures																							
10. Water Use pump testing																							

Key to Notation

"done" Indicates that PCWA appears to have complied with this BMP for the given customer categories

"X" Indicates that the BMP applies to the customer category

"X5" Indicates that large landscape irrigation programs may apply

A blank cell indicates that the BMP appears not to apply to the category, except for CVPIA AG BMPs which are not rated.

water-using establishment dedicated to public service. This includes schools, courts, churches, hospitals, and government facilities. All facilities serving these functions are to be considered institutions regardless of ownership. Figure 7, "BMP#9 Commercial, Industrial, and Institutional Definitions Applied to PCWA Customer Categories," displays which PCWA categories are included by BMP#9.

Figure 8, "Placer County Water Agency Customer Categories and Types of Water Use" shows different types of indoor and outdoor water uses arrayed with the PCWA customer categories. This comparison is helpful in targeting customers for water efficiency programs.

Figure 8

BMP #9 Commercial, Industrial, and Institutional Definitions Applied to PCWA Customer Categories

	PCWA Treated Water Billing Categories										
	Residential single family	Commercial	Landscapes	Municipal	Multi units	Agriculture	Industrial	Resale to other utilities	Surplus	Zero Demand	Miscellaneous
BMP # 9 Commercial, Industrial & Institutional BMP Definition											
Commercial											
any water use that provides or distributes a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce		x	x	x			x				
Institutional											
any water-using establishment dedicated to public service. This includes schools, courts, churches, hospitals, and government facilities. All facilities serving these functions are to be considered institutions regardless of ownership.		x		x							
Industrial											
any water users that are primarily manufacturers or processors of materials as defined by the Standard Industrial Classifications (SIC) Code numbers 2000 through 3999.		x					x				
Types of Water Uses.xls	PCWA Rate Types vs. CII Def 10/06/99										

Suggested Water Efficiency Activities

Review of PCWA water uses suggests the following water efficiency activities. They emphasize controlling water delivery, quantifying all water use, developing effective programs to control peak demand, and water efficiency requirements for future customers.

1. Test a Sample of Customer Meters to Determine Meter Accuracy

Reason: PCWA data indicates that treated water production data exceeds treated water sales by an average of 16 percent during the period 1995-1998. This is well above the 10 percent recommended by the AWWA and the CUWCC BMP#3.

BMP#3 requires: annually complete a prescreening system audit to determine the need for a full-scale system audit. The prescreening system audit shall be calculated as follows:

I) Determine metered sales: 17,523 AF PCWA Zone 1 1998
ii) Determine other system verifiable uses; unquantified
iii) Determine total supply into the system; 20,781 AF PCWA Zone 1 1998
iv) Divide metered sales plus other verifiable uses by total supply into the system. 17,523 / 20,781 = 0.84
If this quantity is less than 0.9, a full-scale system audit is indicated.

One of the first tasks recommended by the AWWA *Water Audits and Leak Detection Manual* is to verify metered uses. This means test a number of customer meters. PCWA reports that all large meters are tested annually. The associated revenue increase should recoup more than the cost of meter testing.

PCWA staff also reports that many residential meters are approaching 15 to 20 years of service. Slow meters record less water use than actually delivered to the customer and contribute to declining revenues. A typical meter accuracy profile and potential revenue loss curves are shown on Figure 9, "Accuracy of Displacement Meters with Age" and Figure 10, "1999 Revenue Losses Due to Slow Meters."

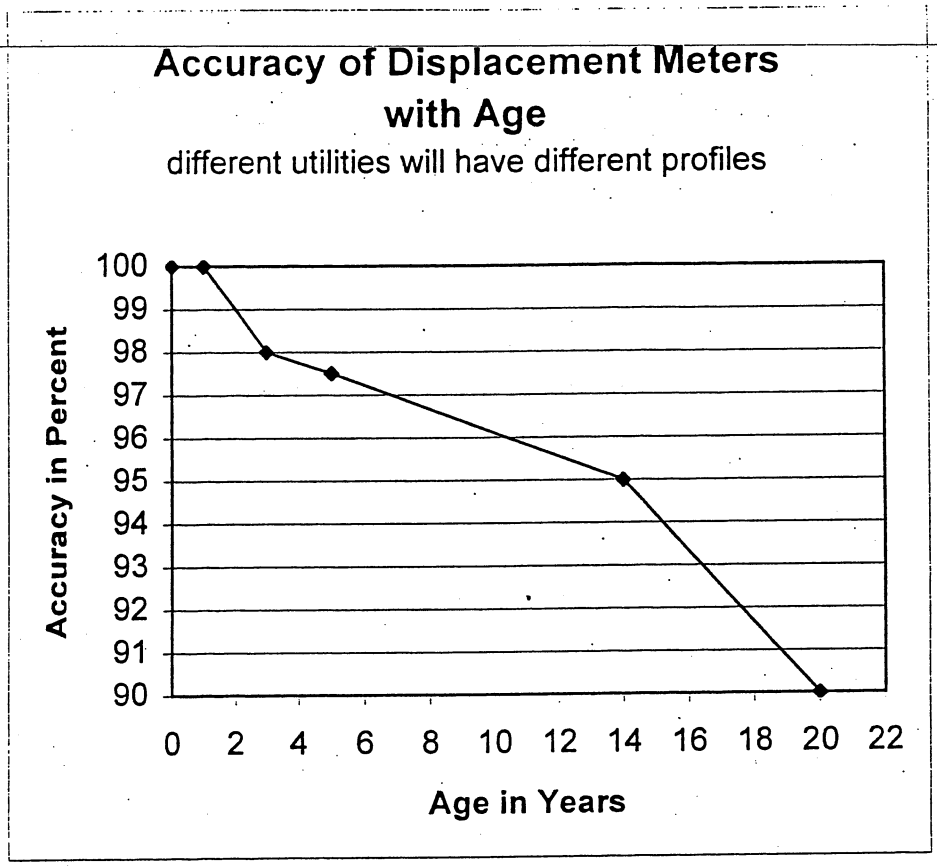
Test 50 residential meters "in-place" to determine accuracy as they are currently being used. Cost is estimated as:

50 meters X 2 hours per meter (including travel time) X $40 per hour (wages & benefits) + vehicle cost of $60 per day for 14 days = 4000 + 840 = $5,840

The results can be used to:

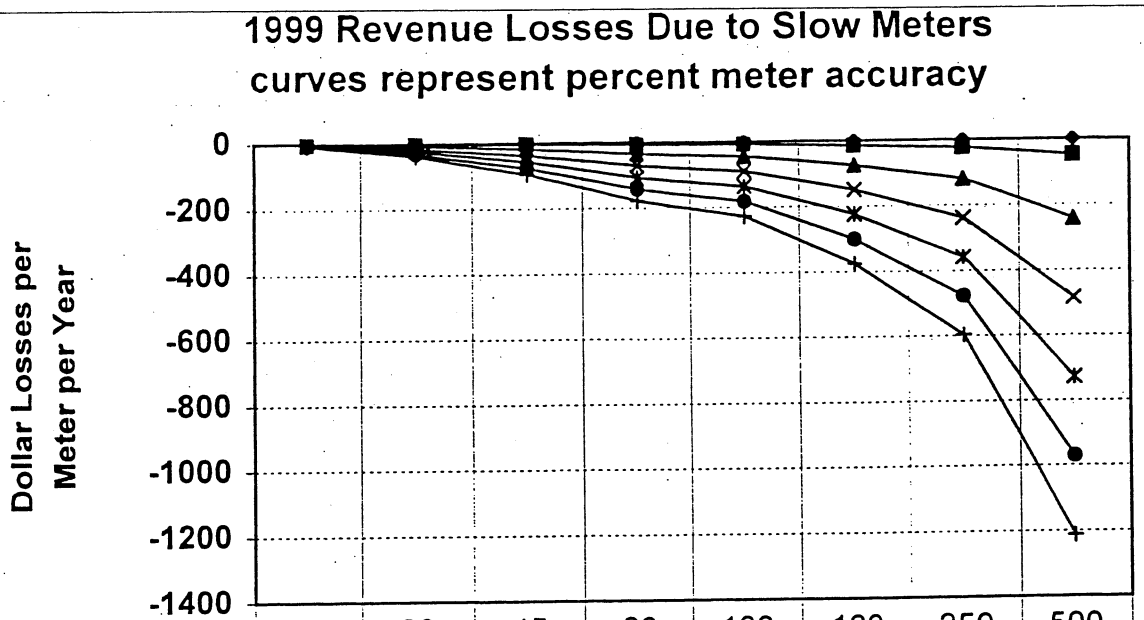
- revise estimates of accounted-for-water
- revise the schedule to replace aging meters
- determine which meter brands and geographic locations deserved the most attention.

Figure 9



Source: "Metering and Demand Management" by Virginia Porter, City of Santa Rosa, presented at Conserv 99

Figure 10



	4	20	45	80	100	160	250	500
100 %	0	0	0	0	0	0	0	0
99%	-0.32	-1.67	-3.84	-7.13	-9.10	-15.01	-23.88	-48.51
95%	-1.62	-8.37	-19.18	-35.67	-45.52	-75.07	-119.4	-242.5
90%	-3.24	-16.73	-38.36	-71.33	-91.04	-150.1	-238.8	-485.1
85%	-4.85	-25.10	-57.54	-107.0	-136.5	-225.2	-358.2	-727.6
80%	-6.47	-33.47	-76.73	-142.6	-182.0	-300.3	-477.6	-970.2
75%	-8.09	-41.83	-95.91	-178.3	-227.5	-375.3	-597.0	-1,212.

PCWA 1999 residential consumption rates

2. Hire a water conservation coordinator

Reason PCWA needs the expertise. BMP #12 describes the duties of a Water Conservation Coordinator as:

i) Coordination and oversight of conservation programs and BMP implementation;

ii) Preparation and submittal of the CUWCC BMP Implementation Report;

iii) Communication and promotion of water conservation issues to agency senior management; coordination of agency conservation programs with operations and planning staff; preparation of annual conservation budget; participation in the CUWCC, including regular attendance at CUWCC meetings; and preparation of the conservation elements of the agency's Urban Water Management Plan.

In additional to the above, potential tasks for PCWA's water conservation coordinator might include:

- develop an ordinance with Placer County to require retrofit of plumbing fixtures upon the resale of residential buildings;
- develop a customer data base to track water conservation programs and evaluate their effectiveness
- set up a landscape irrigation program
- coordinate PCWA planning and conservation staff to prepare water conservation plans as required for Sacramento Water Forum, U.S.B.R., DWR and CUWCC
- develop programs for real estate developers to install optimum water efficient fixtures and appliances in new construction
- develop cooperative cost sharing programs with regional wastewater, energy, and water utilities;
- coordinate water awareness and efficiency education classes and workshops with regional vendors and educational institutions
- implement the water conservation practices suggested in this report

3. Real Time Canal Flow Monitoring System

Installing flow measurement stations on raw water canals and telemetering the information to a central location would allow faster response to spill situations and record actual flows leaving the raw water distribution system.

For the years 1994-1998, the April through September irrigation season average canal flows (Zone 1 raw water in - Zone 1 treated water), were approximately 34,500 AFPY. If the metering and telemetry system could save just 2 percent of that water, it would be worth $34,500 per year in avoided American River pumping costs. For three stations on each of four canals at $10,000 per station, the $120,000 initial cost would be recovered in four years.

4. Irrigation Efficiency Programs

BMPs #5, #1, #9 and CVPIA AG #3

Approximately 33,000 AFPY of PCWA's Zone 1 water is used for irrigation. Programs should be developed to address this largest use of water in the district. A certified irrigation specialist would require a salary of $60,000 per year plus benefits. The actual work time may be limited to eight months per year.

The landscape specialist for the Contra Costa Water District conducts landscape audits at more than 100 sites per year. In addition to personnel costs, marketing, participation incentives, and implementation rebates may add an amount equal to the salary to the program budget. The newly published CUWCC *Handbook BMP 5 A Guide to Implementing Large Landscape Conservation Programs* provides a variety of approaches and costs for large landscape programs.

Sample Evaluation Formats for Demand Management Programs

In 1995, William Maddaus prepared the *Sonoma County Water Agency, Final Water and Wastewater Efficiency/Avoided Cost Study* to quantify the cost effectiveness of 13 water efficiency measures for the SCWA's eight water contractors. To create the 20 year present worth analysis of avoided costs due to implementation of additional conservation elements, the following data were developed:

- current and projected population and employment
- historical and projected water uses by customer class
- future capital improvement plans potentially effected by conservation programs
- status of current conservation programs, documentation of water saved, and options to conserve additional water
- benefits due to deferral of: water agency O&M expenses, agency water supply and transmission system expansion, and wastewater infrastructure improvements.

A summary table showing the benefit cost indicators and net present values of the potential water efficiency programs is included as Figure 11, "Sonoma County Water Agency Cost Effectiveness of Each Measure and Entire Program."

Figure 11

Sonoma County Water Agency
COST EFFECTIVENESS OF EACH MEASURE AND ENTIRE PROGRAM
(TOTAL FOR EIGHT WATER CONTRACTORS)

Program One	Measure Savings (AF saved 1995 - 2015)			AF in	Measure	Average	Measure Benefits (Present Value of Avoided Costs)			Net Unit	Economic Indicators	
Measure	Indoor	Outdoor	Total	2015	Cost (PV)	Cost ($/AF)	Water	W/Water	Total	Cost ($/AF)	B/C Ratio	Net Present Value
1: Rsdntl Audits	1,503	984	2,488	147	$571,973	$230	$203,119	$884,010	$1,087,129	($207)	1.9	$515,155
2: System Audits	0	272	272	17	$1,149,729	$4,230	$26,051	$0	$26,051	$4,134	0.0	($1,123,678)
3: Metering	5,540	8,310	13,849	896	$3,869,218	$279	$1,075,225	$5,071,116	$6,146,341	($164)	1.6	$2,277,123
4: Lg Lndscp Audits	0	5,386	5,386	326	$1,877,121	$349	$432,409	$0	$432,409	$268	0.2	($1,444,712)
5: Irrig Upgrades	0	300	300	23	$186,974	$623	$23,590	$0	$23,590	$544	0.1	($163,383)
6: Irrig Ordinance	0	7,511	7,511	576	$489,397	$65	$591,218	$0	$591,218	($14)	1.2	$101,821
7: Non Res Ind Audits	1,032	0	1,032	62	$656,612	$636	$82,978	$664,730	$747,708	($88)	1.1	$91,096
8: Non Res Out Audits	0	2,685	2,685	162	$1,571,867	$586	$216,152	$0	$216,152	$505	0.1	($1,355,715)
9: Irrig Incentives	0	10,079	10,079	944	$3,132,179	$311	$798,567	$0	$798,567	$232	0.3	($2,333,612)
10: Toilet Replacement	20,152	0	20,152	1,120	$8,250,798	$409	$1,653,423	$11,723,311	$13,376,734	($254)	1.6	$5,125,935
11: Non Res ULF	26,424	0	26,424	2,518	$2,188,726	$83	$2,086,012	$24,693,473	$26,779,485	($931)	12.2	$24,590,760
TOTAL	54,652	35,526	90,178	6,792	$23,944,595	$266	$7,188,744	$43,036,641	$50,225,384	($291)	2.1	$26,280,790

Program Two	Measure Savings (AF saved 1995 - 2015)			AF in	Measure	Average	Measure Benefits (Present Value of Avoided Costs)			Net Unit	Economic Indicators	
Measure	Indoor	Outdoor	Total	2015	Cost (PV)	Cost ($/AF)	Water	W/Water	Total	Cost ($/AF)	B/C Ratio	Net Present Value
1: Rsdntl Audits	1,654	1,083	2,737	162	$571,973	$209	$223,431	$972,411	$1,195,842	($228)	2.1	$623,868
2: System Audits	0	272	272	17	$1,149,729	$4,230	$26,051	$0	$26,051	$4,134	0.0	($1,123,678)
3: Metering	5,540	8,310	13,849	896	$3,869,218	$279	$1,075,225	$5,071,116	$6,146,341	($164)	1.6	$2,277,123
4: Lg Lndscp Audits	0	6,463	6,463	391	$1,877,121	$290	$518,891	$0	$518,891	$216	0.3	($1,358,231)
5: Irrig Upgrades	0	330	330	25	$186,974	$566	$25,950	$0	$25,950	$487	0.1	($161,024)
6: Irrig Ordinance	0	7,511	7,511	576	$489,397	$65	$591,218	$0	$591,218	($14)	1.2	$101,821
7: Non Res Ind Aud	1,032	0	1,032	62	$656,612	$636	$82,978	$664,730	$747,708	($88)	1.1	$91,096
8: Non Res Out Aud	0	3,221	3,221	194	$1,571,867	$488	$259,383	$0	$259,383	$407	0.2	($1,312,484)
9: Irrig Incentives	0	11,087	11,087	1,039	$3,132,179	$283	$878,424	$0	$878,424	$203	0.3	($2,253,755)
10: Toilet Rplcmnt	20,152	0	20,152	1,120	$8,250,798	$409	$1,653,423	$11,723,311	$13,376,734	($254)	1.6	$5,125,935
11: Non Res ULF	26,424	0	26,424	2,518	$2,188,726	$83	$2,086,012	$24,693,473	$26,779,485	($931)	12.2	$24,590,760
12: Appliance Prog	10,076	0	10,076	837	$4,036,393	$401	$491,929	$7,658,931	$8,150,860	($408)	2.0	$4,114,467
13: Irrig Advsry Svc	0	22,943	22,943	1,369	$372,549	$16	$1,159,585	$0	$1,159,585	($34)	3.1	$787,035
TOTAL	64,878	61,219	126,097	9,207	$28,353,538	$225	$9,072,497	$50,783,973	$59,856,470	($250)	2.1	$31,502,932

In 1996, the California Urban Water Conservation Council sponsored the publication of *Guidelines for Preparing Cost-Effectiveness Analysis of Urban Water Conservation Best Management Practices*. The guidelines provide the elements of cost -effectiveness analysis to determine if a BMP may be exempted from implementation. To be exempted, the utility must substantiate that a BMP is not cost-effective, cannot be reasonably funded (including cost sharing), or cannot be implemented as the agency does not have legal authority.

The CUWCC 1996 Guidelines recommends four steps:

1. Identify costs and benefits
2. Measure and value cost and benefits
3. Discount cost and benefits
4. Analyze uncertainty

All of these steps have complications and may require considerable research during the first analysis attempt.

A simplified approach to effective analysis is currently being developed by the California Department of Water Resources Water Use Efficiency Office. The "Cost Effectiveness Tool" is an Excel spreadsheet which (when ready) may be downloaded from the internet. The local agency then enters data reflecting local program costs, customer rates, capital improvement programs, current water supply and future water prices. The "Cost Effectiveness Tool" is scheduled to be available in autumn 1999.

Several software packages for determining cost effectiveness for water conservation practices are available from a variety of consultants. See the WaterWiser internet site services directory (http://www.waterwiser.org/) for an excellent list of consultants.

To design appropriate demand management programs, the actual metered water consumption is needed for each customer category for the January-February period and July-August period. That data would allow estimates of interior and exterior average daily water use per account for residential, multi-family, landscape, and other customer categories. More refinements need population density figures (residents per account) for single family households and multi-family households. These data will allow more accurate estimates of future water use and better estimates of water demand changes due to future management programs.

Potential Funding Sources

Proposition 204 Water Conservation Projects and Feasibility Studies The Safe, Clean, Reliable Water Supply Act provides $25 million for loans to assist local agencies in planning and constructing water conservation and ground water recharge facilities. The bond law established a limit of $750,000 for financing feasibility studies. A single study may receive up to $100,000. The interest rate will be equal to one-half the interest rate

that the state pays on general obligation bonds sold to finance the program. Eligible water conservation projects may include but not be limited to: lining or piping canals or ditches, replacing mains, replacing or installing distribution system controls, repairing leaking reservoirs, or covering or lining open reservoirs. Eligible water conservation projects may also involve: constructing re-regulating reservoirs to conserve already developed water, constructing pipelines to distribute recycled water for reuse, replacing leaking tanks, installing restricted-flow showerheads and ultra-low-flush toilets, constructing tailwater pumpback recovery systems, and improving on-farm irrigation systems.

For more information about Prop. 204 Water Conservation Loan funds, contact David Rolph: Department of Water Resources, Division of Planning and Local Assistance, 1020 Ninth Street, Third Floor, Sacramento, CA 95814; telephone 916-445-8259; fax 916-327-1648; e-mail drolph@water.ca.gov

Prop. 204 also appropriated to the Department of Water Resources funds for feasibility and environmental investigation for water recycling programs that may include partnerships and other cooperative efforts with public entities. For more information about this funding source contact: Susan Tatayon, Department of Water Resources, Division of Planning and Local Assistance, 1020 Ninth Street, Third Floor, Sacramento, CA 95814; telephone 916-327-1666; fax 916-327-1815; e-mail susant@water.ca.gov

On March 7, 2000 California voters will consider Proposition 13, approved by the California Legislature as AB 1584 "The Safe Drinking Water, Clean Water, Watershed Protection and Flood Protection Act of 1999." Prop. 13 identifies $30 million for Water Conservation Loan Funds, $60 million in Infrastructure Rehabilitation, $35 million for Agricultural Water Conservation, and $40 million for Water Recycling Projects. If Prop.13 passes, DWR expects to administration the funds similar to Prop. 204.

U.S. Bureau of Reclamation

The Mid Pacific Region administers funds to assist its contractors with water efficiency programs. Dollar amounts range from $10,000 to 20,000 and may require matching funds from the local entity.

Contacts include: Peter W. Vonich, Central California Area Office, 7794 Folsom Dam Road, Folsom, CA 95630-1799, telephone: (916) 989-7265, fax: (916) 989-7208; and e-mail: pvonich@2fo100.mp.usbr.gov
Tracy Slavin, Mid-Pacific Region, 2800 Cottage Way, Room E-1913, Sacramento, CA, 95825, telephone: (916) 978-5214; fax:(916) 978-5290; and e-mail: tslavin@mp.usbr.gov

Water Resource Development Act (WRDA) Senate Bill 507 enacted in 1999 includes Section 502 which provides:

"(f) ADDITIONAL ASSISTANCE - The Secretary may provide assistance under subsection (a) and assistance for construction for the following: . .
`(23) SACRAMENTO AREA, CALIFORNIA- $25,000,000 for regional water conservation and recycling projects in Placer and El Dorado Counties and the San Juan Suburban Water District, California."

The act does not appropriate any funds for this authorization, nor does it specify which federal agency will administer whatever money is appropriated. It seems prudent for PCWA to work with their Congressional Representatives to get the funds appropriated. A list of desirable water conservation projects and reclamation projects should be quickly established that could qualify for funding from the WRDA authorization.

Cost Sharing with Regional Agencies

PCWA may implement cooperative cost sharing programs with regional wastewater (residential retrofit), energy (high efficiency clothes washers), and water utilities (most BMPs). Public education programs may be provided with the assistance of University Extension, Placer Adult Education School, Sierra College, local school districts, youth programs, and irrigation equipment vendors.

Additionally, the Cal Fed Program may eventually be funded for water conservation efforts.

demando2.pca February 1, 2000

APPENDIX H

American River Pump Station Project
Record of Decision, September 2002 - Board of Director's Minutes, July 11, 2002

RECORD OF DECISION

AMERICAN RIVER PUMP STATION PROJECT

September 2002

Concur:

_____/s/ Frank Michny_____ Date: 9/24/02
Frank Michny
Regional Environmental Officer

Approved:

_____/s/ Susan L. Ramos_____ Date: 10/4/02
for Kirk C. Rodgers
Regional Director

Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Sacramento, California

I. INTRODUCTION

This document constitutes the Record of Decision of the Department of the Interior, Bureau of Reclamation (Reclamation), Mid-Pacific Region, regarding the preferred alternative for the American River Pump Station Project (Project) located on the North Fork American River east of the City of Auburn, California. The Project is the subject of the Final Environmental Impact Statement/Environmental Impact Report (FEIS/EIR), American River Pump Station Project, dated July 2002, developed in compliance with the National Environmental Policy Act (NEPA), and the California Environmental Quality Act (CEQA).

The FEIS/EIR was prepared jointly by Reclamation and the Placer County Water Agency (PCWA). The Project consists of: (1) construction and operation of a year-round pumping facility for PCWA that would divert water from the North Fork American River in the vicinity of the Auburn Dam construction site; (2) closure of the Auburn Dam bypass tunnel; and (3) restoration of the three-quarter mile reach of the river that was dewatered and otherwise impacted by activities associated with Auburn Dam construction and associated access features for the safety of the using public. The EIS/EIR addresses the direct and indirect impacts of three alternatives as well as cumulative impacts associated with increased use of water from the American River, and regional service area impacts.

The purpose of the Project is threefold: (1) to provide facilities to allow PCWA to convey its Middle Fork Project (MFP) water entitlement to the Auburn Ravine Tunnel to meet demands within its service area; (2) to eliminate the safety issue associated with the Auburn Dam bypass tunnel; and (3) to allow for all pre-construction beneficial uses of water in what is now the dewatered river channel, including recreation, navigation, and other instream beneficial uses.

Prior to the onset of construction, Reclamation and PCWA would approve and execute Contract No. 02-LC-20-7790, entitled “Contract Between the United States and Placer County Water Agency Related to American River Pumping Plant and Associated Facilities” (Contract). Reclamation would construct the Project facilities, and pursuant to the Contract, transfer the ownership of the pump station and appurtenances to PCWA for operation and maintenance. Under the Contract, design of the Project facilities must be approved by PCWA.

Decisions and actions related to closure of the Auburn Dam bypass tunnel, restoration of the historic American River channel and any related recreation management actions would be undertaken by Reclamation and by California Department of Parks and Recreation (CDPR), which manages the lands under a cooperative agreement with Reclamation, as part of the Auburn State Recreation Area.

On July 11, 2002, the PCWA Board of Directors certified the Final EIR pursuant to CEQA, adopted various findings required by CEQA, approved the Contract, and approved Design Specifications for the pumping facility. On July 12, 2002, PCWA then

filed a notice of determination pursuant to CEQA. On August 1, 2002, PCWA rescinded its approvals of the Contract and Design Specifications, took new public testimony, and ultimately adopted new findings and re-approved the Contract and Design Specifications. A new NOD was filed on August 2, 2002.

II. DECISION

The decision is to implement the Proposed Project, identified and discussed in the FEIS/EIR as the Mid-Channel Diversion Alternative.

III. BACKGROUND

In *1965,* Congress authorized the construction of Auburn Dam on the North Fork American River near the City of Auburn. Construction began in 1967 and included a cofferdam, a tunnel through a ridge to bypass the river around the construction area (referred to as the bypass tunnel), excavation for the Auburn Dam foundation, and removal of a permanent pump station owned by PCWA. Although The Auburn Dam continues to be a Congressionally authorized construction project, construction has been suspended.

Prior to the initiation of construction of Auburn Dam, PCWA built a 50 cubic feet per second (cfs) pump station on the North Fork American River to convey PCWA water supplies from its MFP to the Auburn Ravine Tunnel for delivery to its service area. However, before PCWA's operations began, the pump station was removed by Reclamation to facilitate construction of Auburn Dam. Pursuant to a Land Purchase Agreement with PCWA described below, Reclamation has since installed a seasonal pump station annually as needed by PCWA to meet water supply demands.

In 1972, PCWA entered into a Land Purchase Agreement with Reclamation under the threat of condemnation. As part of the Land Purchase Agreement, PC WA's 50 cfs pump station was removed to facilitate construction of Auburn Dam subject to Reclamation s provision of an interim pumping facility or alternative water supply until Auburn Dam was completed. As the Auburn Dam Project was designed at that time, water from the reservoir was to flow by gravity into the Auburn Ravine Tunnel to provide PCWA its water entitlements, thereby eliminating the need for a pump station. The Land Purchase Agreement obligated Reclamation to deliver up to 25,000 acre-feet annually (AFA) at a rate of up to 50 cfs.

Pursuant to the Land Purchase Agreement, Reclamation has delivered water through the installation and removal of a seasonal pump station on an as-needed basis. The first time PCWA required access to its MFP water rights to meet system demands was during the drought of 1977. In response to PCWAs request for water under the Land Purchase Agreement, Reclamation constructed a pump station capable of delivering approximately 50 cfs using pumps salvaged from PC WA's original pump station.

Beginning in 1990, PCWA has required access to its MFP water annually to meet its system demands under a variety of operating conditions. Reclamation has responded with

the seasonal re-installation and removal of PCWA's original pumps at the same location as the 1977 installation. Due to the location of the installation, the pumps have to be removed before winter each year to prevent damage due to inundation from high river flows.

The seasonal pumps do not fully meet PCWA's water supply requirements, are not reliable, and have become increasingly expensive to install and maintain. Reclamation can deliver the MFP water supply to PCWA only from approximately April to November. Late-fall, winter, and spring MFP water supplies are not accessible due to the potential for high river flows that can inundate the seasonal pump station. Further, because of limitations on the pumping capacity of the existing facilities (50 cfs) and the timing of seasonal diversions as compared to the pattern of demands, the maximum annual diversion for the seasonal pump station is approximately 19,300 acre-feet (AF). The seasonal pump station no longer permits Reclamation to provide PCWA with a reliable water supply when and where required to meet PCWA's system demands in accordance with the Land Purchase Agreement.

The annual installation and removal of the seasonal pump station has become increasingly expensive for Reclamation. In recent years, the minimum cost for annual installation and removal has been approximately $250,000. The record high flows of the American River during January 1997 destroyed both the access road to the seasonal pump station and the pipeline connecting the pumps to the Auburn Ravine Tunnel. Reinstallation of the seasonal pump station in the summer of 1997 required new foundation work for the access roads and the pipeline, costing Reclamation nearly $1 million.

Auburn Dam remains an authorized federal project. In 1992 and 1996, there were unsuccessful Congressional initiatives to modify and restart the Auburn Dam Project. Since the decision to enter into no new construction contracts was reached in 1977, Reclamation has been managing the Auburn Dam site on an interim basis. Existing site conditions present Reclamation with several resource management issues and opportunities, including public safety, access, and recreation management. In 1994, Reclamation undertook a study to address these issues, together with the installation of a year-round pump station for PCWA. In 1996, the results were published in a report entitled *Preliminary Concept Plan, Restoration and Management of the Auburn Dam Site* (Concept Plan).

Reclamation's Concept Plan identified several interests and options related to improving public safety, access, and recreation at the Auburn Dam construction site. The options identified included closure of the bypass tunnel, restoration of the river through the dewatered channel, and recreational access at the site. Upon completion of the 1996 Concept Plan, Reclamation initiated a concerted engineering and environmental planning effort to implement the findings of the report.

Early in the planning effort, members of the public and certain interest groups supported inclusion of the 1996 Concept Plan site restoration and river bypass tunnel closure measures. In late 1997, Reclamation (1997) undertook a Value Planning Study to further evaluate the options for a year-round pump station, restoration of the Auburn Dam

construction site, and tunnel safety consistent with the 1996 Concept Report. However, following publication of the results of the 1997 study, it appeared that critical Congressional support for the project would not be forthcoming if the project included blocking the bypass tunnel or restoring the river channel. Therefore, during 1998 and into 1999, Reclamation and PCWA concentrated on designing a pump station that would not require the bypass tunnel to be closed or the channel restored.

In September 1999, the State of California's Attorney General sent the Secretary of the Interior a letter indicating legal obligations by the United States to close the diversion tunnel and restore the American River to its natural channel. In March 2000, Reclamation replied that it was ready to address the issues of tunnel closure and river restoration and was willing to enter into a more formal partnership with California to explore alternatives. The Attorney General responded affirmatively and Reclamation and the state entered into a Memorandum of Agreement (MOA) in January 2001.

The MOA obligated the state to provide funding towards the work needed to complete the EIS/EIR and design plans and specifications in connection with efforts to restore the dewatered portion of the North Fork American River. The MOA also obligated Reclamation to include incidental public access to the river in the vicinity of the Auburn Dam construction site for public health and safety, resource protection and emergency purposes, and any other purposes necessary as a foreseeable result to returning water to the dewatered portion of the river under the Proposed Project. Reclamation's agreement with CDPR for management of the Auburn State Recreation Area (Auburn SRA) would be updated to reflect responsibilities associated with river access at the Auburn site and at Oregon Bar.

IV. ALTERNATIVES CONSIDERED

The Proposed Project, as described in the FEIS/FEIR, includes independent but related actions by Reclamation and PCWA, as well as subsequent management activities of CDPR. Reclamation would (1) close the Auburn Dam bypass tunnel and restore the dewatered American River channel so that it can function in a natural manner, (2) build diversion, intake and pumping facilities for PCWA that could operate year round to meet PC WA's seasonal and annual water demands, and (3) would provide minimal public safety and emergency access facilities to allow CDPR to manage the Project site for recreational purposes. PCWA would enter into the proposed Contract with Reclamation to accept future operation and maintenance of the pumping facilities upon their completion, and relieve Reclamation of the obligations of its current Land Purchase Contract upon transfer of pumping facilities to PCWA.

Major features of the Proposed Project include:

- Construction of a new pump station, intake structure and fish screen;
- Installation of water conveyance pipelines;

- Improvement and development of all-weather access roads for project construction and operation;

- Extension of power supply lines;

- Closure of the Auburn Dam construction bypass tunnel;

- Restoration of flow to the American River Channel; and

- Creation of public river access sites/safety features and related improvements at the Auburn Dam site and near Oregon Bar, which also include fire management and mitigation.

These features are described in further detail in the FEIS/EIR.

Upon completion of construction and testing of the pump station, Reclamation will transfer the ownership of the facilities to PCWA, in accordance with the Contract. In accordance with the Contract, PCWA will assume full responsibility for all operation, maintenance, and related activities associated with the pump station and operate such new facilities for the purpose of water supply. Reclamation will retain responsibility for all other operation and maintenance activities associated with the authorized Auburn Dam Project. The proposed contract is included in Appendix B of the FEIS/EIR.

In addition to the Proposed Project Alternative (also referred to as the "Mid-Channel Diversion Alternative"), the FEIS/FEIR evaluated two other alternatives: the "Upstream Diversion Alternative" and the "No-Action/No-Project Alternative."

The Upstream Diversion Alternative would site the diversion/intake structure upstream of the bypass tunnel inlet. Locating the diversion upstream of the bypass tunnel would not require channel restoration or tunnel closure. The project area would remain closed to the public, except for authorized designated trail use. No additional public access facilities would be developed. The pump station location and associated facilities would be the same as proposed for the Proposed Project.

Under the No-Action/No-Project Alternative, Reclamation would continue annual installation and removal of the seasonal pumps at the existing location and maintain responsibility for the operation and maintenance of the facilities. The seasonal pump station facility includes an inlet pipeline that draws water from a small sump pond approximately 750 feet upstream of the bypass tunnel inlet, four pump canisters *(12.5* cfs capacity each), and 2,800 feet of steel pipeline placed above ground connecting the pump station to the Auburn Ravine Tunnel portal.

PCWA would rely upon operation of the seasonal pumps for its MFP water supply; however, within the next few years, PCWA would request that Reclamation install the pumps earlier in the year as PCWA customer demands and overall reliance on the pump

station increase. Because of the risk of flood, however, the pumps could be used only for eight months each year, at most.

The environmentally preferable alternative is the Mid-Channel Diversion alternative as described in the FEIS/EIR. This is the alternative that Reclamation will implement. Of the two action alternatives, the Mid-Channel alternative is the one that restores the dewatered section of the North Fork American River.

V. BASIS OF DECISION AND ISSUES EVALUATED

The Mid-Channel Diversion Alternative has been selected for the following reasons:

The Mid-Channel Alternative best meets all the project purposes.

- Provides facilities to allow PCWA to convey its MFP water entitlements to the Auburn Ravine Tunnel to meet demands within its service area.

- Eliminates the safety hazard associated with the Auburn Dam bypass tunnel.

- Restores the dewatered portion of the North Fork American River at the Auburn Dam bypass tunnel.

The Mid-Channel Alternative also has the following benefits:

- Restores PC WA's ability to divert its MFP water supply year-round.

- Provides a reliable, year-round diversion capacity of up to 100 cfs.

- Alleviates the public safety hazards from the Auburn Dam construction site.

- Opens the American River to water-based recreation from Highway 49 to Folsom Reservoir.

- Provides public safety river access at the Auburn Dam site and at Oregon Bar.

- Alleviates Reclamation's obligations to PCWA under the Land Purchase Agreement.
- Provides the potential to add future diversion capacity of 25 cfs for Georgetown

  Divide Public Utility District and an additional 100 cfs for PCWA.

In addition, the Mid-Channel Alternative is the environmentally preferred alternative.

Although the Upstream Channel Alternative meets the project purpose and objectives associated with providing PCWA access to its MFP water entitlements, it does not meet the purposes and objectives associated with tunnel safety and river restoration. This

alternative has some environmental advantages, in that it would not bifurcate the Auburn-to-Cool trail, which currently provides an equestrian and trail linkage between Auburn and Cool, and since there would not be additional public access, it would not have potential impacts associated with the risk of fire, noise, traffic safety, littering, and illegal activities. Despite these advantages, however, the missed opportunity to restore the dry river bed and to address tunnel safety issues makes the Upstream Channel Alternative, on balance, environmentally inferior to the Mid-Channel Alternative.

The No Action/No Project Alternative would not provide the reliable, secure water supply that PCWA needs to meet seasonal and annual water demands within its service area, nor would it meet the tunnel safety and river restoration goals and objectives. Because there would not be additional public access, this alternative would not have the potential impacts associated with the risk of fire, noise, traffic safety, littering, and illegal activities. As with the Upstream Channel Alternative, however, the missed opportunity to restore the dry river bed and to address tunnel safety issues makes the No Action/No Project Alternative, on balance, environmentally inferior to the Mid-Channel Alternative.

Reclamation also gave very serious consideration to comments received on the draft and FEIS/EIR. The more significant issues raised included:

- Bifurcation of the Auburn-to-Cool trail.

- Potential effects of allowing vehicular access to the river including increased traffic, noise, vehicular emissions, and risk of pedestrian safety, fire, illegal activity, and littering. These comments also included suggested alternative access points on the El Dorado County side of the river and at Manhattan Bar.

- Potential effects on anadromous salmonids of more water from the American River being delivered to the Auburn Ravine watershed.

Reclamation believes that all reasonable actions have been incorporated into the Project to address the issues raised, including, but not limited to:

- PCWA modified its operations to avoid discharging additional water from the American River into Auburn Ravine in order to prevent the possibility of causing straying of anadromous salmonids.

- Vehicular access to the site will only be available when a kiosk at the entrance is staffed and there will be limited hours of operation.

- Parking, except for three American with Disabilities Act compliant spaces, will be limited to one 50-vehicle parking lot located at the old concrete batch plant. Once the parking area is full, no additional vehicles will be permitted to enter the area.

- The existing parking area outside the gate at the Maidu Drive entrance to the project area will be improved to further minimize the potential for recreation-related parking along Maidu Drive.

- Off-road vehicle use, alcohol use, open fires, and overnight camping/parking will be prohibited.

- A comprehensive fire management plan is being prepared. As part of this effort, a Fuels Management Action Plan and an Auburn State Recreation Area Pre-fire Management Plans have been completed. Implementation of the Fuels Management Action Plan is expected to be completed prior to opening the area to public use.

- Shaded fuel breaks will be established on public lands that interface private lands directly affected by the Project, along public access roads, and the parking area.

- The construction contractor will be required develop and implement an effective fire protection and prevention program.

Although the cooperation of the CDPR, who is under contract to manage the subject federal lands, will be necessary to fully implement several of these measures, CDPR staff has preliminarily indicated a willingness to cooperate and to implement the measures or actions within its control. Formal action by that agency has not yet occurred, however. As a "responsible agency" for purposes of the CEQA, CDPR could not take formal action until PCWA first certified the Final EIR, which happened just recently. CDPR is expected to take formal action within the near future.

VI. IMPLEMENTING THE DECISION AND ENVIRONMENTAL COMMITMENTS

Project planning, as described in the FEIS/EIR, included all practicable means of avoiding adverse environmental impacts. Where this was not possible, the Project sponsors have committed to the environmental mitigation actions described in the Mitigation Monitoring and Reporting Program/Environmental Commitment Plan which is included in the FEIS/EIR and is part of this Record of Decision, by reference. Mitigation activities will be coordinated with appropriate federal, state, and local agencies including the Fish and Wildlife Service (FWS), the National Marine Fisheries Service, U.S. Army Corps of Engineers, Office of Historic Preservation, CDPR, California Department of Fish and Game (CDFG), Regional Water Quality Control Board, State Water Resources Control Board, California Department of Forestry and Fire Protection, and Fire Safe Councils for the Auburn Dam and Reservoir Project Lands.

Following is a summary of mitigation measures adopted by Reclamation that are identified in the Mitigation Monitoring and Reporting Program/Environmental Commitments Plan:

Design Activities

- Blend project features with surrounding landscape.

- Minimize noise by enclosing the pumps. Construction Activities

- Establish buffer zone to avoid disturbance of and prevent the permanent loss of riparian, wetland and pond vegetation and associated habitat.

- Minimize impacts upon state and federal special-status species in the project area.

- Initiate measures for entrapped, injured, or dead special-status species.

- Remove all construction material, litter and debris from the site.

- Institute water quality protection measures.

- Maintain public recreation trail access.

- Avoid trail closures that affect the Western States Endurance Run, Tevis Cup Western States Trail Ride, and the American River 50-mile Endurance Run.

- Stop construction activity if cultural resources or human remains are uncovered.

- Develop and implement a construction traffic access management plan that, among other things, requires construction personnel and supply deliveries to limit use of Maidu Drive during peak school-related travel times.

- Minimize ozone precursor emissions.

- Minimize PM_{10} emissions.

- Minimize potential for disturbance of asbestos and exposure of construction personnel or the public.

- Minimize noise.

- Minimize the risk of public exposure to fire hazards.

- Minimize the potential for increased erosion and slope instability.

- Minimize the potential for increased exposure to hazardous materials or fire risk.

Post-construction Activities

- Prevent fish entrainment and impingement at the water supply intake/point of diversion.
- Restore permanent riparian, wetland, and pond vegetation/habitat loss.
- Minimize water quality impacts associated with increased public access.
- Minimize trail user conflicts due to increased public access.
- Minimize littering at public river access points.
- Provide disabled access parking area.
- Develop and implement a programmatic agreement with the State Historic Preservation Officer regarding potential incremental impacts at Shasta Reservoir.
- Provide information regarding new public river access.
- Minimize the risk of public exposure to fire hazards.
- Prevent vehicular access in undesignated areas.

The National Marine Fisheries Service found that the Project is not likely to adversely affect the Sacramento River winter-run chinook salmon, Central Valley spring-run chinook salmon, Central Valley steelhead, and their critical habitat provided that the reasonable and prudent measures as defined in the CVP and SWP Operations (OCAP) Biological Opinion for winter-run chinook salmon and the interim OCAP Biological Opinion for Central Valley spring-run chinook salmon and Central Valley steelhead are adhered to. The National Marine Fisheries Service also stated that the Project would not adversely affect essential fish habitat for Pacific salmon.

FWS has concurred that the Project may affect but will not likely adversely affect federally listed threatened or endangered species within its jurisdiction.

Reclamation received a Fish and Wildlife Coordination Act report from the FWS. As stated in Section VI of this Record of Decision, Reclamation will coordinate with the FWS to implement all appropriate recommendations in the report, as much as possible, for all project implementation activities.

FWS has provided a planning aid memorandum regarding the cumulative impact analysis in accordance with the Fish and Wildlife Coordination Act. FWS recommended and Reclamation agrees to do the following:

- Keep the FWS informed of new information regarding the Project;

- Utilize the American River Operations Work Group to assess the probability, extent, intensity, and mitigation of short-term adverse conditions in the lower American River;

- Improve the definition of impact thresholds in future water supply planning studies;

- Provide further data and analysis to support conclusions regarding the significance of impacts on important water quality and flow parameters in future studies; and

- Provide further rationale to support conclusions on the significance of impacts where the analysis is subjective in future studies.

FWS recommended that Reclamation prepare a programmatic EIS for the American River-related foreseeable actions and develop a programmatic record of decision. Reclamation is not the lead agency for many of the foreseeable American River actions, and thus does not believe it appropriate to complete a NEPA document addressing actions of others. In addition, Reclamation believes the comprehensive cumulative impact analysis, which is the subject of this planning aid letter, provides the information necessary for Reclamation decision makers to understand the impacts of their decisions as they relate to actions in the American River basin.

FWS recommended that Reclamation develop a water resources management plan for the American River basin based on a programmatic EIS and programmatic record of decision. Reclamation believes that basin planning can best be done by local interests, such as the Water Forum and the Lower American River Task Force, which have recently completed a River Corridor Management Plan. Reclamation is a major contributor to the implementation of that plan as it relates to protecting fish and wildlife in and along the lower American River. We do not believe that a more formal commitment would change our contribution to that, and other efforts.

FWS recommended that Reclamation develop a mitigation plan that considers needs for mitigation of historical and present CVP impacts, then considers mitigation needs for new impacts of the American River-related reasonably foreseeable actions. Reclamation and FWS have developed such a plan pursuant to Central Valley Project Improvement Act and both agencies are presently implementing that plan. Regarding impacts of future actions, some are being mitigated prior to the actions taking place (such as the temperature control device on Folsom Dam's municipal and industrial supply intake and participation in implementation of habitat conservation plans) and others as the actions are approved and implemented (such as water districts agreeing to not serve water to new developments until the developer gets any necessary approvals from the FWS).

Lastly, FWS recommended that Reclamation enter into discussions with the FWS to develop an ecosystem-based programmatic ESA consultation on the group of American River-related reasonably foreseeable actions. Reclamation and FWS have had such discussions in the past and Reclamation has elected not to proceed with such a programmatic consultation due primarily to the staggered timing of American River actions, the fact that many actions are not well defined as to terrestrial activities and possible effects, and the fact that many actions in the American River basin are locally driven. Reclamation will continue to consult on its actions as they are developed and may revisit the concept of a programmatic consultation if circumstances are shown to warrant such an approach.

VII. COMMENTS RECEIVED ON THE FEIR/EIS

Comments received on the FEIR/EIS generally relate to the following issues.

Public Vehicular Access to the River and Risk of Fire
Several letters were received regarding public vehicular access to the river and the perceived additional risk of fire associated with the access. There were letters both opposing the access and supporting it. Issues raised were the same as those raised in comments on the DEIS/EIR, and those issues were addressed in the FEIS/EIR.

Adequacy of the FEIS/EIR Related to Mitigation for Bifurcation of the Auburn to Cool Trail
An e-mail from the Action Coalition of Equestrians alleged that the FEIR is significantly flawed by it's omission of a legally enforceable monitoring and mitigation plan which addresses the specific crossings of the American River by users of the Auburn-to-Cool trail. The crossing issue was extensively addressed in the FEIS/EIR, and CDPR has initiated a program to address it.

Adequacy of the FEIS/EIR Related to Impacts on Steelhead in Auburn Ravine A letter from the Ophir Area Property Owners Association, Inc. made several allegations that the FEIS/EIR inadequately addressed impacts to steelhead in Auburn Ravine. Issues related to what the commenter alleged was an inadequate baseline, the possibility of non-native steelhead from the American River/Nimbus Fish Hatchery straying into Auburn Ravine, indirect and cumulative impacts related to the project, the alleged lack of adequate mitigation and alternatives, and the extent of the public participation process. These issues were extensively addressed in the FEIS/EIR. In addition, PCWA modified its operations to mitigate for impacts associated with the diversion of additional American River water directly into Auburn Ravine. In concluding that these comments lack merit, Reclamation is relying not only on its consultants who prepared the document, but on the NMFS and CDFG, the agencies that have jurisdiction over steelhead. Those agencies believe that the analysis is complete and adequate, and generally do not agree with the allegations in the letter. The NMFS finding, of no adverse effect on any listed species under their jurisdiction, reinforces Reclamation's conclusion that the FEIS/EIR fully meets the requirements of NEPA.

M I N U T E S

BOARD OF DIRECTORS
PLACER COUNTY WATER AGENCY

Thursday, July 11, 2002
7:00 p.m. ADJOURNED MEETING

A. CALL TO ORDER

Chair Jarvis called the adjourned meeting of the Placer County Water Agency to order at 7:05 p.m. in the Board of Supervisors Chambers, Placer County Administrative Center, 175 Fulweiler Avenue, Auburn, California. Director Roccucci led the Pledge of Allegiance.

Board Directors present:	Alex Ferreira, Mike Lee, Pauline Roccucci, Otis Wollan, and Chair Lowell Jarvis.
Board Directors absent:	None.
Agency Personnel present:	DAVE BRENINGER, General Manager; JAN GOLDSMITH, General Counsel; KATHLEEN SMITH, Clerk to the Board; EINAR MAISCH, Director of Strategic Affairs; DON REIGHLEY, Director of Technical Services; and BRENT SMITH, Engineer III.
Others present:	Jim Micheaels, California State Parks and Recreation; Rod Hall, United States, Department of the Interior, Bureau of Reclamation.

B. PUBLIC COMMENT

Steven Proe, El Dorado County Taxpayers for Quality Growth opined that the description for agenda item # G.1 states a preconceived action of the Board of Directors. General Counsel responded that she did not agree.

Other members of the public approached the podium at this time to comment on the American River Pump Station Project. The Chair requested they hold their comments until such time the matter is presented by staff and considered by the Board.

C. DEPARTMENT HEAD REPORTS / AGENDA REVIEW & APPROVAL: None.

D. GENERAL ITEMS

1. Considering the Final Environmental Impact Report (EIR) for the American River Pump Station Project as follows:
   a) Considering whether the final EIR complies with the California Environmental Quality Act and reflects the Agency's independent judgment; and
   b) Adopting Resolution No. 02 - ___ Certifying that the Final EIR for the American River Pump Station Project complies with the California Environmental Quality Act and reflects the Agency's independent judgment, and that the Agency Board of Directors has reviewed and considered the information in the Final EIR.

Einar Maisch, PCWA Director of Strategic Affairs provided an historical background of the Agency's involvement in the American River Canyon. Legal overview of the process, scope of actions to be considered by the Board of Directors, and the roles of the participants were provided by Jan Goldsmith, General Counsel for the Agency. Legal summary of the National Environmental Policy Act/California Environmental Quality Act process was provided by Jim Moose, Special Counsel. Description of the American River Pump Station Project improvements was provided by Wayne Dahl, Montgomery Watson Harza and Rick McLaughlin and John Anderson, McLaughlin Water Engineers. Description of the use of the water and planned operating limitations was provided by Brent Smith, Agency Engineer. Paul Bratovich and Tami Mihm, Surface Water Resources, Inc. summarized the final Environmental Impact Report and proposed mitigation measures.

Chair Jarvis opened the public comment period at 8:40 p.m. and specified a time limit of five minutes per speaker. Oral comments on all agendized action items were received at this time. The following persons presented oral comments:

Ron Otto, Ophir Property Owners Association; Karen Clay; Lou Ann Hammond, Auburn; Liza Clark; Ben Troia, Skyridge Residents for Safety; Kevin Dimmick; Jerry Wilfley, Auburn; Ron Pinnick, Auburn; Phil Bearry, Robie Point resident; Kevin Hanley, Auburn; Charles Casey, Friends of the River; Steve Hiatt, Auburn; Steven Proe, El Dorado County Taxpayers for Quality Growth; Gordon Ainsleigh; Tim Woodall, Protect American River Canyon; Art Krueger, 11270 Wisteria Way, Auburn; Al Clark, 1492 Stone Way, Auburn; Richard Sanborn, 135 Midway Avenue, Auburn; Peggy Egli, 313 Riverview Drive, Auburn; Suzanne Ferroggiaro, 9270 Oak Leaf Way, Granite Bay; Terry Davis, Sierra Club; Nate Rangel, Loomis; Donna Williams, 4170 Auburn Folsom Road, Loomis; Ken Nittler, South Auburn for River Access; Bob Snyder, 100 Marina Avenue, Auburn; Tom Gullett, 11215 Mira Loma Drive, Auburn; Tim Lasko, 701 Gibson Drive, Roseville; Ed McIntosh, 1162 Humbug Way, Auburn; David Ryan, 11155 Rosemary Drive, Auburn; Beverly Harrington, 10045 Snowy Owl Way, Auburn; Bert Lefty, 1364 South Dowd, Lincoln; Janet Peterson, 1680 Ponderosa, Colfax; and John Mark, 395 Riverview Drive, Auburn.

Comments were also received from Jim Micheaels, Department of Parks and Recreation. Written comments submitted to the Board prior to the meeting were summarized by General Counsel. Further comments were solicited from staff and consultants, in response to the public comments. Discussion and inquiry by the Board followed. Director Ferreira moved adoption of **Resolution No. 02-20** certifying that the Final EIR for the American River Pump Station Project complies with the California Environmental Quality Act and reflects the Agency's independent judgment, and that the Agency Board of Directors has reviewed and considered the information in the Final EIR. The motion was seconded by Director Wollan and adopted by unanimous vote of directors present on roll call.

2. Considering American River Pump Station Project agreement with Bureau of Reclamation., including approval of Agreement Between United States, Department of the Interior, Bureau of Reclamation and Placer County Water Agency as it relates to the American River Pumping Plant and Associated Facilities. Such action shall include the adoption of Findings of Fact, a Mitigation Monitoring Plan, and a Statement of Overriding Considerations prepared pursuant to the California Environmental Quality Act.

Public comment on this item was included in the public comment period described under D-1 above. Director Lee moved the adoption of **Resolution No. 02-21** Making Findings and Statement of Overriding Considerations Concerning the American River Pump Station Project, Adopting the Mitigation Monitoring Program, and Approving Contract 02-LC-20-7790 with the United States Bureau of

Reclamation. The motion was seconded by Director Roccucci and adopted by unanimous vote of directors present on roll call.

3. Considering American River Pump Station Project construction plans and specification, including approving, disapproving, or modifying the American River Pump Station Construction Plans and Specifications for construction of Phase I of the improvements. Such action shall include readopting the previously-approved Findings of Fact, a Mitigation Monitoring Plan, and a Statement of Overriding considerations prepared pursuant to the California Environmental Quality Act.

Public comment on this item was included in the public comment period described under D-1 above. Director Roccucci moved adoption of **Resolution No. 02-22** Approving Drawings and Specifications for Phase I of the American River Pump Station and Authorizing the Director of Technical Services to Approve Necessary Changes Thereto, and readopting the previously-approved Findings of Fact, a Mitigation Monitoring Plan, and a Statement of Overriding considerations prepared pursuant to the California Environmental Quality Act. The motion was seconded by Director Ferreira and adopted by unanimous vote of directors present on roll call.

E. REPORTS BY DIRECTORS, GENERAL COUNSEL, AND GENERAL MANAGER

F. ADJOURNMENT

Meeting adjourned at 11:48 p.m.

ATTEST:

_____

KATHLEEN A. SMITH, Clerk to the Board
Of Directors, Placer County Water Agency

APPENDIX I

Letter of Support

Regional Water Authority
Building Alliances in Northern California

Edward Winkler
Executive Director

5620 Birdcage Street
Suite 180
Citrus Heights, CA 95610

Tel: (916) 967-7692
Fax: (916) 967-7322
www.regionalwaterauthority.net

RWA

December 2, 2002

California Department of Water Resources
Office of Water Use Efficiency
P.O. Box 942836
Sacramento, CA 94236-0001
Attention: Ms. Marsha Prillwitz

Dear Ms. Prillwitz:

I am writing in support of the Placer County Water Agency's (PCW A) grant proposals to the Department of Water Resources under the 2002 Urban Water Conservation Grant Solicitation.

The Regional Water Authority (RW A) is a joint powers authority of 17 water suppliers serving more than 1.2 million people in the greater Sacramento region. Our mission is to serve and represent regional water supply interests and assist RW A members with protecting and enhancing the reliability, availability, affordability, and quality of water resources. R W A is currently implementing a Regional Water Efficiency Program designed to expand measures to help area water providers fulfill Water Forum and California Urban Water Conservation Council best management practices (BMPs).

PCWA is an active member of the Regional Water Authority and the RWA Regional Water Efficiency Program. We strongly support the PCW A applications entitled "Swimming Pool Cover Incentive," "DeWitt Center Water Use Efficiency Project," "Canal Lining", " Auburn-Bowman System Audit, Leak Detection and Repair", and "Water Lin Replacement Project."

The PCW A proposals further the ability of PCW A to meet their Water Forum Agreement commitments, and are fully compatible with the CALFED water quality, water supply, and environmental restoration objectives.

The Regional Water Authority recommends that the Department of Water Resources fund PCW A's proposals.

Sincerely,

Edward Winkler
Executive Director

cc: David Breninger